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CONTENTS

Section one: General findings

Introduction

This report is the first technical report from the project "New Competencies for Knowledge Services in the Self-Service Society" and has been written according to the agreement between SSF and the research team to conduct a pilot study of the project. It specifically deals with methodological problems of how to measure competence in relation to web-based self-services and investigates whether the critical incident technique is suitable to do this. In this sectioon of the report (section one) we first present the issues that we have investigated; we conclude concerning the methodological question and what our pilot study has shown about competencies and knowledge services provided via ICT-networks. Our conclusion is based on three case studies, which are thoroughly analysed in section two of the report. The critical incidence technique (CIT) should contribute to solving the research problem that we have formulated, namely (quotation from the project description):

> *"The project has two general objectives. The first objective is to investigate how users (firms and citizens) can appropriate the benefits of the new possibilities presented by self-service. For firms the benefits include more effective access to knowledge and, consequently, improved competitive advantage. For citizens, self-service can improve their lives and welfare. All this relates to society. The second objective relates to business, the aim here is to investigate what competencies are important when developing knowledge services in knowledge service firms and public service providers in order to add customer/user value. This, in turn, can improve the competitive advantage of both these firms and public service providers. Customer satisfaction may also be improved.*
>
> *The project will apply the so-called critical incident technique in order to shed light on these questions. We will identify certain "situations" involving self-service users. Thereafter, we will investigate the required competencies that may be linked to the specific situations. The method is based on interviews, observations, surveys and subsequent analysis, and it will be developed further by using video films, experiments with web use, and, in addition, self-confrontation interviews will be undertaken to study applied competencies in real time".*

To determine the strengths and weaknesses of the critical incident technique in measuring competence in relation to online delivery and use of knowledge services, we have decided to compare the critical incident technique to other more traditional data collection methods such as web-based surveys, traditional semi-structured interviews, and explorative interviews. We have then compared the results so as to determine the relative strengths and weaknesses of these techniques in comparison with the critical

incident technique. This has been done in three different methodological settings: business to business (case 1), service provider to group of citizens (case 2) and business-to-consumer (case 3).

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Competence

The concept of competence has recently been much discussed in the literature. There is no authorized definition, but the concept is the basis for a theoretical development. Our approach to using the concept of competence is to consider it a practice and action oriented one. Competence is the ability to act in situations (cf. Docherty and Marking 1997, Ellström 1992). Competence thus not only includes knowledge and expertise, but also the capability to solve problems in concrete situations. Further, competencies might include social abilities. These are important, for example, when taking into consideration the consequences of one's action on other people in the organization, which again requires knowledge about others' situations.

In our study we focus, in particular, on competence as an interactive ability. The topic of the study is service production and delivery, which traditionally has been seen as a relational activity between the service provider and the customer (e.g. Heskett, Sasser and Hart 1990, Grönroos 2000). We want in the project to investigate what happens to the service relation when knowledge services take a self-service form, thus allowing the customers by themselves to compose the service by using ICT-networks such as the Internet. We have therefore given the concept of competence a special meaning, related to self-service, namely the ability to engage in dialogue and use a service relation in spite of the distance in time and space.

Competence can be organizational as well as individual. In this pilot study we have concentrated on individual competence, since the critical incident technique mostly gives information related to the individual level. However, in the process of investigating individual competencies, we have also discovered organizational competencies. We emphasize the user's as well as the service provider's competencies as both are important to ensure an efficient use of ICT-based knowledge services.

In this pilot study we have taken an inductive approach. The data should speak for themselves and the critical incident technique is tested in concrete situations that are different in the different methodological settings.

The critical incident technique

The critical incident technique was developed by the US airforce to select competent pilots (Flanagan 1954) and has been used in a great number of studies investigating competencies. Critical incidents are defined as episodes or behaviors deemed to have a special positive or negative impact in a situation. Interviews were used to collect the data, which were primarily of a subjective kind. Interview results have been analyzed both with advanced computer programs and intuitive text analysis. It is assumed that the respondents may be in a position to recall certain critical events. Data collection may be supplemented with observation or video filming with the aim to acquire competencies exposed in real time. The method has been particularly used in research of service production and delivery (Roos 2002, Edvardsson and Roos 2001).

In this project we have applied the critical incident technique to identify required competencies for the delivery and use of ICT-network based knowledge services. The critical incidents are episodes or behaviors, which have had a special positive or negative impact on the use of these services. The interviewees define the critical episodes, often with the help of unstructured qualitative interviews or more structured questionnaires by the interviewer.

The critical incident technique gives a detailed description of what happened, why it happened and what specific actions were taken to solve the problems. The interviewees were asked in the pilot study to describe the chronological course of actions, emphasizing crucial and decisive moments. The critical incident technique should give more exact information about which competencies were actually crucial – either as present or absent – in concrete situations. The information should then be less influenced by general attitudes and lapse of memory.

The pilot study design

In this pilot study we have tested the critical incident technique in three main case studies corresponding to three different methodological settings. In each case study we apply the critical incident technique together with other data collection techniques. This is done to determine the strengths and weaknesses of these methods in relation to each

other and especially to determine the suitability of the critical incident technique to answer our research question, which is the main purpose of the pilot study.

The three case studies emphasize three different models of service delivery, namely, business-to-business service provider-to-group of citizens, and business-to-consumer, as showed in figure 1.

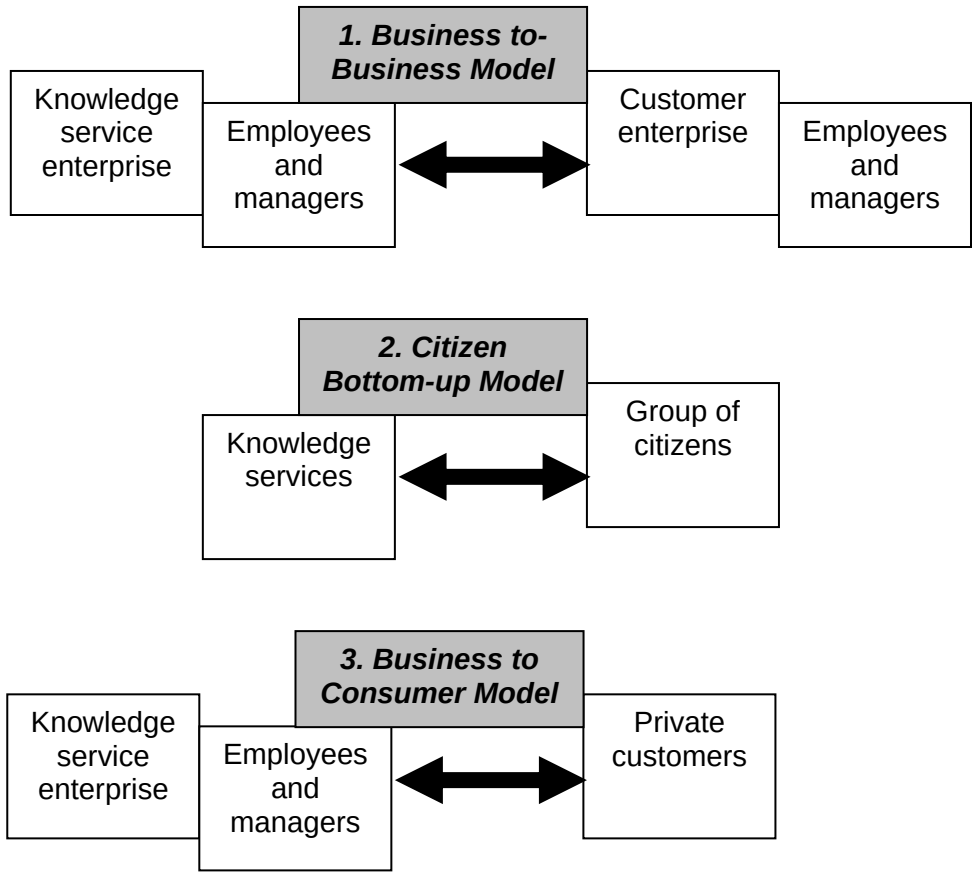


Figure 1: Three models of service delivery in the cases

The first case was a web-based travel booking system provided by a business travel agency, thus this case concerned business-to-business services. The data collection method used was qualitative interviews with an interview guide. Each interview consisted of two parts: one based on a more traditional qualitative semi-structured questionnaire, and a more structured one specifically aiming at applying the critical

incident technique. The semi-structured interview guide was only a checklist and the interviewees were allowed to formulate their own statements and stories about the use of the system.

The second case was a high school class. It focused on the students' use of the Internet as a general information system to get information to write a specific essay. This is a situation where citizens use knowledge services on the Internet to get information. One class was selected and one teacher and the students of the class were interviewed. The data collection method was explorative starting with qualitative interviews with the teacher leading to the formulation of an interview-guide. The interview guide was formulated with the aim of identifying critical incidences by chronologically asking about the students' experiences with the use of Internet.

The third case study was carried out in a bank and dealt with issues related to the customers' use of an online banking system (business to consumer of e-services). The data collection method used was a web-based standardized survey supplemented with a telephone interview with a structured interview guide. The critical incidences were measured both with standardized questions in the survey and with semi-structured questions in the supplementary telephone interviews. The web-based survey also included questions about the use of these services while the supplementary interviews, which lasted in average 5 minutes, only focused on a specific critical incidence and tried to understand what the customer had done in the situation.

Preliminary results concerning situational competencies

The three case-studies presented in the reports have been carried out to test the relevance of the method. In the following we attempt to draw some preliminary conclusion with regard to the situational competencies for self-service required in the cases.

First and foremost, we must conclude that the competencies required were very *context specific* and *intertwined with different fields of practices*. Nevertheless, these different contexts did share some main characteristics as to their ability to function effectively, using self-services:

The *creation of a learning environment* where actors can learn from each other were important in all three cases. In the bank case, navigation was a main factor, and

problems of navigation on the website were experienced in an emotionally negative way. These problems were mostly overcome with the help of the bank. In the booking agency, the training offered by the travel agent for customers and the dialogue between the agent and the customer were both important for an effective use of the self-service. In the Gymnasium class, finally, the framing offered by the teacher in interaction with the students was an important incident for learning.

Anxiety to do something wrong was an important factor in the booking agency. Conversely, enthusiasm of the involved actors, and the presence of a model that could be observed or learned from, seemed important in at least two of the cases: in the travel agency and in the gymnasium. We therefore propose that a *safe and enthusiastic learning environment* is an important incident for learning.

In such a learning environment, it seems important that people *share an epistemic framework*, i.e. can understand each other's situation or know each other personally from face-to-face interactions.

An important aspect of this situational competence was the ability to give and receive *feedback*, both on technical problems and problems of content. Feedback seemed both a requirement for the technology to work and at the same time something, which was enabled by the technology, particularly in the case of the gymnasium and bank.

Most of the incidents experienced were incidences of short duration often involving practical problems. The ability of the actors to set up *intermediate aims* and *adjust expectations and thereby capacities for action* were important. In the case of the bank, beginners and old hands clearly had to be treated differently.

The critical incidents reported here is just a first attempts to summarise our findings from the pilot study concerning competencies, and they should be further investigated in each of the cases to fully explore how self-services can be integrated skilfully into each specific practice context.

Summary of our experiences with the critical incident technique

We have attempted to investigate different modes of applying the critical incident technique. Our conclusions are the following (cf. the case studies in the following section). Starting with the Internet survey, we can conclude that verbal accounts were richer in displaying how respondents were acting in that particular situation. Statistical

evaluations did not capture the complexity of how respondents acted. Focusing on trivial, but nevertheless, crucial problems of handling IT interfaces, the critical incident technique questions in the web survey gave an accurate description of events. This was ascertained by the follow up of brief interviews lasting only a couple of minutes. These short interviews gave an even richer, an emotionally laden, account of how respondents felt about the situation. All in all, we can conclude that even short and trivial events (captured by the critical incident technique) can generate relevant and accurate accounts of competencies using a web survey. This bodes well for a standard approach to using the critical incident technique.

Second, we completed traditional semi-structured interviews with very different kinds of respondents such as customers, users and development employees in a business travel agency. This study generated a number of descriptions of e-competencies. We compared traditional interviews to a focused critical incident technique to evaluate the benefits with the latter. We can conclude that even though the traditional interview technique gave useful information, the critical incident technique was giving us additional and more detailed knowledge about social and action-specific information for each respondent, which was very concrete. This is important because it adds to our understanding about how respondents can develop an account given the appropriate stimulus and focus. All in all, a traditional interview may very well be complemented by an in-depth critical incident technique.

Third, we wanted to create an open approach to using the critical incident technique. Investigating how IT is taught and used in Danish high schools we interviewed a teacher and his students about their experiences in a chronological way by asking about how they had used IT to solve an essay home work. This open way of defining what constituted a critical incident worked well in the sense of generating prototypal events. Students gave very concrete accounts of their experiences. In this sense the critical incident technique was effective. However, we feel it important that students (and respondents) have a quiet environment in which to express their events. This adds to a genuine account. By using a rather simple object of study (limited situational context for the high school students) we were able to gain more knowledge about the link between the critical incident technique and the task to be accomplished.

Summarizing our results we can conclude that the critical incident technique has been effective as a complement to traditional data collection methods. It gives a focused, and action-directed account and details about what happened to (and were experienced by) respondents. In this way, we can, more concretely, collect information on competence. This is the essence about our understanding of the competence construct. Therefore we feel that the critical incident technique is an appropriate way to capture competence at work, particularly when it is combined with traditional methods, which means standardized surveys as well as qualitative interviews.

As a complement to the critical incident technique, our case studies suggest that observation studies and video-recording are also relevant. Another important method suggested by one of the cases is text analysis of the exchanges that have being going on among the producers and users of the self-service. Surveys and statistical analysis should be used to examine the discovered incidents more widely among firms and users.

All in all we thus recommend a multi-methodological approach, of which the critical incident techniques should be a core one, in studying competencies of ICT-network based knowledge services.

Section two: Case studies

Case 1: Business-to-business services – A business travel booking system

Case 2: Citizen bottom-up – Using knowledge-based self-services in a high school (Danish Gymnasium): the case of “netstudier”

Case 3: Business to consumer – Web-based self-service and e-competence

Case 1: Business-to-business services – A business travel booking system

The case: TQ3 Travel solutions

This case is a business-to-business service, namely a travel booking system, provided by TQ3 Travel. TQ3 Travel sells travel solutions to firms only mostly concerning airplane tickets, but they may include the booking of hotels, trains, and car rental. Traditionally, travel solutions have been and are still sold by the customer calling TQ3 and getting a booking specialist to whom the customer explains what he or she wants. TQ3 charges a fee for each booking. This fee represents TQ3's income.

The largest problem in buying a travel ticket is the large variety of fares offered by the different airline companies. This is further complicated by the many rules conditioning each single fare, for example when a passenger is allowed to travel, reimbursement conditions, etc. By selecting and combining different single or return tickets and finding the "right" airline, a low price can be ensured. The core competence of TQ3'can be defined as the knowledge about the different price structures and related conditions and/or restrictions. The customers want the right booking at the lowest possible price; thus TQ3 is in a market characterized by a standard product and high price competition where, however, the price structure is extremely complex.

TQ3 specify the fee the customers have to pay for the bookings by establishing a contract. Such fees can vary from company to company. The bookings are generally made by one or a few particular persons within the customer firm – typically a secretary - and very rarely by the customers' employees – who are the persons travelling – directly. This is explained as a result of the travel policies in the interviews. All the customers interviewed (five firms) had a travel policy of travelling as cheaply as possible (however with some flexibility concerning the time to travel, waiting time etc.).

These firms had decided that all bookings should be centralized into one or few particular employees (normally secretaries) to ensure the fulfillment of the low price travel policy. The single traveler, in fact, may act opportunistically by, for example, choosing business class because it is more pleasant or a certain airline company due to a particular travel bonus system, etc. The person(s) that make the booking learn about the travel habits and business conditions of the individual traveler and get experience in

ticket conditions and fares, thus becoming booking experts. TQ3 also sells consultancy services in relation to the customers' travel policy, in addition to cheap travel solutions. TQ3 has, for example, an account manager that spends several days each year at the customer sites destinations to discuss the customer's general travel budget and policy and to find solutions to optimize both the customer's travel conditions and expenses.

The booking experts in TQ3 mostly use an international common airline booking system called Amadeus, which is rather complicated to use.

Some years ago, TQ3 introduced a Web-based online reservation self-service system called Webbuster. Since the online travel booking system has been introduced, the bookings have been done in the traditional way or by the customer directly booking and buying on the online system. The customers can therefore directly access TQ3's web-sites. The online reservation system Webbuster is based on a first generation system called Pricebuster, initially developed as a help to the booking experts within TQ3. The booking experts in the customers' firms are also those using the Webbuster system. They can book airplane seats and hotel rooms, however at present only one-way or simple return tickets. If a person is going on a trip involving more then one destination, the Webbuster system can not be used because the possibilities for combination and the related conditions become very complicated.

The booking fee charged by TQ3 is reduced if the customer makes the booking through the online system thus bypassing TQ3 employees, therefore the incentive for the customer to use the system. The self-service system (Webbuster) reduces the production costs for TQ3 and thus creates a greater profit even though the fee is lower than in the traditional way of booking, where the customer calls a booking expert in TQ3. The strategy of TQ3 is to get as many customers as possible to use Webbuster. Until now only about 8% of the bookings are made by the customers via Webbuster. This rate is, however, higher than the average rate in the business travel branch, which is about 5-6% (it is higher in the consumer market where the travel pattern generally is much simpler).

TQ3 has developed Webbuster in-house in a development department established some years ago. The development department consists of two or three people with expertise in IT and web-site creation. This expertise is the result of practical experience from earlier IT-jobs more than formal education or training. The system was developed

in this department without involving other employees or customers except occasionally and in a test-phase. The developers received feed-back about the system in the first functional phase, partly through customer reactions via a help desk established together with Webbuster, but mostly through the failures of user-operations stored in the system's register.

The case study is an investigation of why the customers use the self-service system Webbuster, which new competencies the customers, TQ3 Travel and its employees have developed to develop and use the online system and which barriers are there for its use. A further issue is how the booking employees in TQ3 Travel have experienced the introduction of the internal booking system, Pricebuster.

Competence

We have defined competence as an action oriented concept – it is the behavior that is efficient in a given situation. Competence is situational, which means that it is the ability to handle a certain situation, which depends on a series of factors. These factors can be knowledge from training or earlier situations, willingness to seek solutions to the situation, existence of a network to use for providing information and help, the type of e-service in question, etc. Specifically, we define e-competencies as the set of competencies related to an e-service. This definition includes the one of ICT competence. Competence is also specifically defined in relation to a service-handling situation, which implies that competence is relative. The user must have some competencies, but the service provider must also have some competencies as well. Even in a self-service situation the service provider must have some competencies to help the user. These competencies may, for example, be employed in the development of the self-service system and thus embedded in the system and its functions or could be stored in a help function that the user can use if necessary. Dialogue thus is an important part of the competence notion as we use it (Prichard 2000). Competence is continuous learning.

Competence can be both individual and organizational. The individual competence is the single employee's ability to use the self-service system in an efficient way. The organizational competence includes for example the organization's back-up system, whether the organization is open and communicative thus the users of the system know

how their use affects the work of other members of the organization and the general willingness to train the employees.

Since we have defined competence as situational, we cannot beforehand say which elements are important in relation to a concrete situation or e-service. They have to be discovered from time to time. This definition and approach fit particularly with the bottom up method used in this case study. However, even though, we have defined competence as situational, we generally expect that some situational competencies are common to more situations and therefore a certain degree of generalization might be reached.

The Research Method and Data Collection

The methodological approach has been an inductive and hermeneutical one (cf. Kvale 1994). The basis has been the general interpretation of competence as situational, however, what this may exactly imply has to be seen from the interviews.

To fulfill the major objective of this pilot study, that is to test the critical incident technique in relation to our research question, we have chosen to compare it to a more traditional semi-structured interview. In this way, we believe, we can better determine its strengths and weaknesses.

The general data collection method has been qualitative interviews. In each interview we can distinguish two parts: one based on a standard semi-structured interview guide and one part based on a more structured interview guide specifically aiming at applying the critical incident technique.

In the critical incident technique the starting point is a specific isolated incident (that can be perceived as positive or negative). The interviewer goes then very much in detail and technically through that specific episode. The interview follows a chronological pattern, asking questions such as “When did you experience a problem? What happened? What went wrong? What did you do?” The intention is to find very detailed factors or conditions that were crucial in a particular incidence. This gives a larger degree of exactness and more details than in the general semi-structured interview and thus more valid results.

In this pilot study, the critical incident technique has been applied by asking the interviewee to tell about a very specific situation where he/she had experienced

problems while using Webbuster or a positive situation where someone had learned something. Normally the interviewees talk about a situation where they themselves faced problems or had a positive learning experience, but in some interviews they told about how another person faced such a situation (e.g. a booking expert in TQ3 telling about how a customer faced a situation). Since competence in our approach is interactive, the experiences of the employees in TQ3 as well as those of the booking experts in the customer firms are important.

In the classical semi-structured interview technique the interviewer asks rather general questions. The interviewee to a large degree tells about her/his general experiences – in this case with travel booking and Webbuster – and presents opinions and attitudes. The interviewee may tell a narrative, but it will be structured from what she/he thinks is important or interesting or from the researchers pre-assumed notion of the phenomena in case. The interview becomes rather general to cover all aspects and gives a holistic impression thus the researcher through a hermeneutic interpretation can conclude what are the most important factors or driving forces behind the phenomena.

In this study the questions of the semi-structured interview were specifically developed with the intention to investigate issues related to competence. For example, which competencies are required to book travel solutions, which new competencies are required when Webbuster has introduced and which competencies the producers and users may lack to get a fully efficient use of the system. Even though we had a checklist of issues, we often let the interviewees tell their own story. This had the purpose of letting them define what are the most important issues concerning booking travels and using the Webbuster system.

In the semi-structured interviews we started by identifying the interviewee and his/her use of Webbuster system. We intended then to go directly to questions about how the system works. However, it turned out that it was an advantage to first let the interviewees tell the history of their work function and how Webbuster came into that. The interviewees themselves started to tell narratives about the history and it made it possible for us to better assess which new work requirements Webbuster implied. Further, it gave a very useful general framework of the work tasks. The competence aspect was expanded from being a technical work matter to include a broader development perspective. This was important for understanding why the concrete

competencies were necessary and provided us with a broader and more original theoretical perspective. The manager of TQ3 and a few developers were asked about the background for developing Webbuster.

The interviews

The interviews have been conducted with managers and employees in TQ3 and travel booking experts in customer firms as follows:

- TQ3 Travel: five traditional booking experts, two software developers (Webbuster) presently responsible for the system maintenance, one from the helpdesk function, one account manager responsible for advising customers about contracts with TQ3 and their travel policy, the managing director.
- Customer firms: a total of five, mainly located in Copenhagen area, but some also in Jutland. A booking expert was interviewed in each customer firm.

The interviews were conducted face-to-face by two researchers from the research team. The interviews lasted between 45 and 90 minutes and were fully transcribed.

The interviews were divided into topics and the critical incidents identified. In a later phase of the project, we intend to use the information gathered in the interviews to develop theoretical categories and concepts. However, at this phase of the project we have mainly concentrated our analysis on the assessment of the strengths and weaknesses of the critical incident technique vs. the more traditional semi-structured interview technique.

How the semi-structured and critical incident interviews were conducted: a synthesis of 5 models

We have mixed the two techniques (semi-structured and critical incident) in each face to face interview. Both have been used to get the same results?, namely what is competence in relation to using Webbuster and which competencies does the interviewee have or lack. To make a full test we have varied the mixture of the two techniques and have used the following models:

A. Critical Incident as the main technique

- Starting with Critical Incident (asking about an example)
- Then doing the traditional semi-structured interview part

B. Critical Incident as inspiration technique

- Starting with the traditional semi-structured qualitative interview part
- When the interviewee mentions an example, the interviewer catches that immediately, interrupts the narrative of the traditional interview and asks chronological questions about this incidence
- The interviewer goes back to the traditional semi-structured interview part

C. Critical Incident as a complementary technique

- Starting with the traditional qualitative semi-structured interview part
- The interviewee is asked about some critical incidences at certain times in the interview (typically when one topic seems to be exhausted). In relation to B, the critical incident technique is here used in a more planned manner.
- The interviewer continues with the traditional semi-structured interview part

D. Critical Incident as a supplement

- Going through the whole traditional semi-structured qualitative interview part
- Asking about critical incidents at last

E. Critical Incident as a repetition technique (combination of B and D or C and D)

- Starting with the traditional qualitative semi-structured interview part
- When the interviewee mentions an example, the interviewer catches that immediately, interrupts the narrative of the traditional interview and asks chronological questions about this incidence – or the interviewee is asked about some critical incidences at certain times in the interview
- The interviewer goes back to the traditional qualitative semi-structured interview part
- Asking about critical incidents at last

We will in the following make an assessment of which of these models has been most efficient in our research context.

Evaluation of the different Interview Models

The mixed methods where the traditional semi-structured qualitative interview technique and the critical incident technique were mixed seemed to work best, proving the strengths of these two techniques when used as complementary to each other. Model B and C seemed to be the best. Both worked well in the situation. However, in the following analysis of the interview transcriptions it became clear that model C where the interviewee throughout the interview is asked specifically about critical incidents gave the clearest description of such episodes. We can recommend a mixture of model B and C, however, we believe that model C is the best. The interviewer should catch the incidences that the interviewee impulsively mentions, but should also from time to time ask for examples, which may lead to a description of a critical incident. The latter is the most important.

An example of the technique of model B is the following:

Interviewer: And if we go back to the other situation you just mentioned, where they suddenly could not change the ticket for those 100 dollars, what would you so do afterwards, after you have gotten the message from the client? What did you do to solve that situation?
Interviewed: The first thing I did was to call the airline company, they are often nice with us, and said "Try to listen here, we have made a mistake, can we find a solution? Because they know us. They also know that we are precise…-So there was on the reservation that that (the ticket) should be bought by the 7th of August according to the first travel that had been reserved. I change it, because the customer would prefer maybe to travel one day earlier, and then reserve it, but I forgot to change the last day for buying the ticket (that is the 7th of August), but this travel that I have booked now, because there is now a new rule, this travel has as deadline the 6th of August, maybe. So it is my duty, of course, to call the airline company and ask whether we can issue the ticket for the price we have promised the customer. Regarding this they are usually very flexible. And often it is very important to be precise with things, that you do not get stressed, due to so many telephone calls and so many travels with many different destinations, but you just read everything very carefully.
Interviewer: What is your interpretation of this type of situations?
Interviewed: I would say, that it should be some sort of routine. It is clear, it is not a challenge just to write a new date for the ticket, it is more learning to clean up and learning to have some routines.

An example of the technique of model C is the following:

Interviewer: Can you recall some situations where you had problems with a customer that were solved in a positive way?
Interviewed: Yes, I had one from the bank that lives in New York and he travels over here circa every half year. And he had traveled to New York and he had no paper ticket, but only an electronic ticket. We are promoters of that, because it is a huge advantage to sell electronic tickets, because you save all the process of making and sending a paper ticket to the customer. And that he also had accepted and had traveled to New York. And when he had to travel back home, so we have such an intelligent machine that counts the days from the initial travel date. If a customer has a ticket and after three months has not used the return ticket yet, so the machines intervenes and credits automatically the money to the client. It is very smart because you do not loose the credit of the money, that you otherwise could have forgotten. But this man should use his ticket, so two weeks ago he was suddenly there in New York and had to travel back home, and so they said to him "There is no ticket my friend" because our smart machine "e-ticket sweeper", as we call it, had been somewhere in the system, found the ticket, cancelled it and emitted a credit note for him. So he called our hotline and was very upset because he was there somewhere in New York at 11 p.m. and was supposed to travel home, and there was no valid ticket for him. And then he got a new ticket and was able to fly back home even though the plane was full. And all that is queued for us, so when I show up at work Monday morning-it had happened during a weekend-then I could see that all this had happened. The person from the hotline that had talked with the client had written that he was very upset and it is understandable. And there it was, when I went back to look in the system. Then I could see that the e-sweeper machine had credited the ticket. Then I called the customer, and explained to him in a simple way and said "It has simply been cancelled, because we have such a smart machine". And he said "oh" and I said that it should not cost him anything, because it had not been his mistake, it was our mistake and there was nothing that we could do. And he was actually positive and answered that there was nothing to do and now he had come home and that he did not want such an electronic ticket anymore, but it was understandable.
Interviewer: But that experience that you have had in this case, have you given it further to some else in the system here? Or have you just noted that it happens?
Interviewed: No, because our support department should have maybe discovered that the man had not come back yet and that he did have to come back at some point, so obviously we have given this information further to them. And the problem is not solved yet because we do not actually have a solution to what should be done if someone has such an electronic ticket and is away for more then three months. So it is not completely finished yet..
Interviewer: So is there still a problem?
Interviewed: No, we are learning from experience about what we should do to make sure that this kind of mistakes do not happen again, because it is not to anyone advantage that all the customers that are away for more then three months do not have a ticket when they have to come back home. But it happens only when we make the electronic tickets. But it is difficult with those electronic tickets, because they are

the most advanced type of tickets, and when you convince the customer to go for it, then it is actually a pity when it goes wrong, because then they go 5 steps back. That we have tried to lock them in and try this new type of ticket and then it does not function….

Model E also worked well. When several critical incidences have been brought up throughout the interview, the interviewee seems to have been "put on the track" of the critical incident technique and can easily find more examples. Model B and C, however, are the most natural in the interview situation. Model E could therefore be recommended if the interview has not given enough critical incidents or the interviewer is looking for some specific types of incidents that the interviewee did not mention or could not remember in the interview.

Model A did not work very well. It was difficult to conduct an interview that gave a good amount of useful information by just asking about a critical incident. The interviewee often answered that she/he did not remember any. The interviewer needed to put the interviewee "on the track" by having a more general talk, before getting into specific critical situations. Model D did work in some cases where the interviewee remembered one or some critical incidents, however, not in all. Besides, only few critical incidents were presented at the end of the interview. Model D is thus not recommendable.

Temporal Dimension of the Critical Incident Technique

The literature has discussed extensively the temporal dimension and limitation of the critical incident technique (Edwardsson and Roos, 2001). We also found that the critical incident technique as a general method can only be used to investigate incidents that have happened recently or relatively recently. The interviewees had, in fact, often difficulties in remembering incidents that had happened more then one year before the interview, even if it could be a relatively remarkable event as when a booking secretary in a customer firm started to use Webmaster. The following example illustrates that:

Interviewer: How did you start to use the Webbuster system in concrete terms?
Interviewed: It is simply so long ago, that I can badly remember that, but I believe that TQ3 informed us about the existence of the system. And then I also believe that I attended a seminar on that or they came over here and gave a demonstration, I cannot actually precisely remember. And I cannot remember, whether they were here or we were at their company when they introduced us to the system. It was either one

or the other. And so I thought that it was smart, also because we could save money by doing it by myself.

In some situations could the interviewee remember a critical incident that happened more than one-year back, but this was not general. The interviewees mostly brought incidents taking place a half to one-year back up by themselves. They were generally important incidents and therefore still easy to remember. When we asked systematically for historical critical incidents, the interviewees often had difficulties in remembering any.

The result of the methodological experiment

We will in the following summarize our results of this test. In accordance with the general methodological principles of the qualitative hermeneutical method (Kvale 1994), the conclusions are based on the researcher's qualitative interpretation of all the interviews. However, we will illustrate our points by using quotations from the interviews where information have been obtained by using the critical incident technique.

The general conclusion is that the critical incident technique is a very powerful instrument to get information that is action oriented and specific to a particular situation, thus providing a rich set of data related to the "situational competence" as defined in this project. The semi-structured interview was also very valuable by providing us, instead, with a set of general information about the company, the travel policy, etc. However, each one of them applied independently of the other would not have led to the richness of the results that we have presently got. This is especially because it would have been difficult to make the interviewee think about critical incidents if we had not had any introductory discussion first. On the other hand, the classical semi-structured interview would not had given us the level of detail and exactness that the critical incident technique has brought to our study.

For example by using only the critical incident technique, we would not have got information about the general travel policy of the customer firms and its importance for the product that TQ3 is selling. This was never mentioned as an explicit factor in the critical incidences.

On the other hand, without the critical incidence technique we would not have gotten information about the importance of knowing the return tickets rules (a kind of juridical competence), or the importance of the help desk personnel talking the same language as the travel bookers located at the customer sites or the importance of the booking employees in TQ3 understand the situation and feelings of the customers.

An example of the latter could be the story of a booking employee in TQ3 trying to educate the booking experts in the customer firms. This requires that the employees in TQ3 can understand the customer booking experts' - and even their firm-internal customers' – situations and way of thinking:

Interviewer: Can you recall some critic episodes, where the customer succeeded or not succeeded to use the Internet system, Webbuster?
Interviewed: What can happen is that if they do not feel comfortable with what they have booked, if they have booked a restrictive ticket and the customer should actually be allowed to make changes to the reservation, then it is all wrong, and it is so that we have to go in the system and cancel and then book a new ticket, and this happens once in a while. And it has something to do with the fact that a secretary maybe is not completely comfortable, and one should actually go in and read the rules before saying OK to book that specific ticket, at one looks at "Are there restrictions on this ticket?". They see the price "Wow, it is so cheap", books it and then the ticket gets issued, and then the person that has to travel think that it is possible to make changes, and calls the secretary "I would like to have this ticket changed" and then instead it cannot be changed. It is something that can go wrong. And we also insist very much on this, because so comes the secretary to us, and not to the Webbuster team, because now the Webbuster booking is actually dead, if you can say so, or completed, it is over. So come they to us, and then we have to explain "Remember those rules!"
Interviewer: What do you precisely do to solve that problem?
Interviewed: So we cancel that reservation, and technically make another round trip ticket that get sent to the customer, and technically we have to refund the old one and reserve a new one. So it is me that overtakes the booking. Otherwise we say also to the secretary "Go in and book a new ticket again". Again she gets it cheaper. But it can be that the secretary says" No, I do not dare". So it can be that we have to convince them that what is important is "Go in the system and read those rules".
Interviewer: What do you do in those types of situations?
Interviewed: If now the customer has traveled, then there is not much else to do then to say that the ticket is lost, that we have to book a new ticket, so we go in the system and make a completely new reservation. If the customer has not traveled yet, then we might go in and check what can be refunded on that ticket and so refund it. So it is this type of things that we can do.
Interviewer: What do you do precisely to solve that situation?
Interviewed: So we cancel the reservation, technically make a new round trip ticket that gets sent to the customer and technically we have to refund that and then book a new one. Then it is me that overtakes the booking. Or we also say to the secretary "So go in and make a new booking again". Again she gets it cheaper. But it can be

that the secretary says "No I do not dare". So we have to convince them at what is important is "Go in and read these rules".
Interviewer: So they have to have some knowledge of the rules and they have to be able to understand them?
Interviewed: They should be able to. But there is also..I believe there is a button, where there is written Rules, and it is that, they have to go in and check and I also believe that it becomes red, to get your attention to the fact that there are restrictions on this ticket. So it is this we often say, when such misunderstandings and wrong reservations or wrong booking happen, "Go in and read these rules".
Interviewer: But does this lead to them abandoning the use of the system?
Interviewee: No, not completely, they try again. And it is also important for us to say "Stop with loosing interest, try again. Because you have done this once…what is just so important is to read those rules or just call if you do not feel confident, so call and get guidance, and see if you have done it right. Because we have to make them to book again.
Interviewer: Do they get some guidance on how to use the Webbuster system when first it is installed?
Interviewed: Yes, I believe that there is also follow up 2 or 3 times per year, I do not know how often it is.
Interviewer: Does it take place here or does it take place online?
Interviewed: I believe that they go and visit the secretaries. It is important that they see the systems.

Both types of interview have demonstrated their value in giving inductive perspectives on competence as a many-faceted phenomenon. For example, the travel bookers' use of the system in the customer firms is much related to the travel policy of the firm. They need to take into consideration the travel policy when making a decision about which ticket to book.

Another issue is the initial use of the Webbuster system by the travel bookers at the customer firm being generally influenced by two factors. One was the training offered by TQ3 to the travel bookers. A person from TQ3 came to the user firm and trained the travel booker for a half-day or more. The other factor seemed to be the travel bookers' enthusiasm and her/his anxiety and fear of making failures by using the system. Those who ended up using the system were enthusiastic about using the Internet in general. The travel bookers were all afraid of making failures, but some overcame that anxiety. In the daily use of the system, the travel bookers needed some practical sense to operate the system, knowledge of the codes in the system (for example every city has a code that one must be typed in to make a reservation) and some knowledge about the rules for the fares. They also needed to know about the travelers' conditions – for example his personal preferences for staying overnight, whether a meeting could be moved etc. They

did not need, instead, any computer knowledge or programming skills. This was also investigated more in-depth and with more details by using the critical incidence techniques. A couple of examples can illustrate that.

The following is a learning situation from the development of Webbuster:

> *Interviewer: Do you have some examples of what it was that did not function?*
> *Interviewed: The way we sent our questions, there we have some buttons on one side, where there is…I cannot remember, what there was. There were four buttons and people could not simply understand which button should they use for what. And those searches, they were really interested in, did not give the results they would have liked to because they pressed the wrong button. It was really understandable. There was too much travel experts' language and too much IT-language. That we have changed now, so that we only have one button that opens a picture where there are further explanations. So we have experienced that our customers do not understand what we say. We have not been looking for consultants to get some help or whatever. And we still have buttons that are not appropriately correct. We have a button that is called "submit", what does it mean submit? It is such a word that does not mean anything. That is, add, but add what?*
> *Interviewer: How did you solve that problem?*
> *Interviewed: The way we did at that time, again we had no experience, we were there as amateurs. It happens that we discover that something does not function, customers do not understand what we would like them to understand. And so I get surprised and then I say, "What are we going to do? " Then I sit down and find maybe 5 words, that can substitute precisely those buttons or that specific button or whatever could be. Find other words and other meanings, to substitute them. The only thing we do, we do not ask others, we ask internally to the team here, 5 people and say, "What word should we use? What should we do?" We talk about it and then we make a decision and we go for it. So it is also today, if there is something we are not satisfied with or we can see that the customers have problems with, so we make an overall decision and say "Let's change it". If the customers react to it, then we listen to it, if the customers do not react then it means that it must be ok.*

The following episode illustrates one of the largest barriers to using the online self-service system Webbuster, namely the anxiety of doing something wrong plus who can help:

> *Interviewed: But most of the new people that have to use it…I was myself at the beginning, I was a little bit nervous. I thought "Jesus, what happens now, if I press ok? There are some times you can be a little nervous about whether you can delete it or cancel it again. I have also made some mistakes, where I have pressed ok and just waited….where I was expecting a travel plan and see written until 4 to cancel it, instead there was just written "Issues within half hour" or "Issues immediately", so there is to take the telephone right away and get it cancelled. There can happen mistakes.*
> *Interviewer: So do you call the help desk?*

Interviewed: Yes or the others (travel colleagues in TQ3) because there is still the reservations number, it is our reservations codes, they use.
Interviewer: So can they step in?
Interviewed: They can cancel it, yes. It is at TQ3 and it does not matter whether it is their normal offices or it is the help desk. They look at the same. The difference is that the help desk can go in and look at it, as it is on the screen in Webbuster, the others cannot. They do not have anything to do with Webbuster. I do not think that they are interested either. They do not have to either; it is not the meaning.

All in all, we can conclude that they can well complement each other in the specific study of situational competencies in web-based self-services.

Finally, the critical incidences have in this case been "small" incidences. The reported situations often concern practical problems that the travel booker has faced. However, such situations are important steps in building the user's competence. For the service provider, the "small" incidences are not necessarily small because they are symptoms of general problems with the booking system. This implies also a connection between individual and organizational level competencies that could be further explored in a future phase of the project.

Conclusion

In this pilot study on e-competencies, we can conclude that both the traditional semi-structured interview and the interview specifically applying the critical incident technique are suitable to identify categories and concepts related to e-competencies, and are especially powerful when used in combination. The critical incident technique, however, was especially powerful in providing us with a richness of detailed and action-specific information (very relevant for our definition of competence) that the traditional semi-structured interview could not offer. The critical incident technique has in particular given insight into the practical skills that the system requires and the social skills (that are knowledge about the travelers' conditions). These factors would not have been discovered, or not as exactly and in depth, without the critical incident technique.

Case 2: Citizen bottom-up – Using knowledge-based self-services in a high school (Danish Gymnasium): the case of "netstudier"

Method and set-up

Using the critical incident technique, this case-study examines how the Internet is applied as a learning tool in a Danish gymnasium (high school). We investigate in what sense the Internet, as a self-service, can be an attractive and a meaningful learning environment and what situational competencies are needed for it to be so.

The case-study concerns the application of an Internet based learning management system called "netstudier" [net studies] which is presently applied in several Danish high schools (gymnasier) as well as in adult education (VUC). Netstudier is a virtual meeting place and classroom where teachers and students can communicate, give student assignments, organise links, upload reports and essays, work with and communicate about specific projects using the Internet, etc.

The system reminds one in several respects of the more widely known knowledge-management system called GroupCare, though it can be used for several other tasks as well. The system is actually a fusion of the Canadian TLM (The Learning Manager) and the Danish GroupCare. Students and teachers situated in a real class and real gymnasium use it. Access to the system is over the Internet through a login-page, where teachers and students can log into a specific website belonging to the actual school where they are enrolled or employed as students and teachers using a password. After that, students and teachers log into their class and go further on to a specific subject of that class (physics, chemistry, geography, English, etc.). The system has been developed in cooperation between Copenhagen and Frederiksborg counties. On the login website, the system is described as follows (http://www.netstudier.dk/dk/):

> *"Netstudier is a digital meeting place-a virtual classroom- for students and teachers that gives the possibility of completely new and flexible teaching forms. For example, delivering of interactive teaching material, teaching plans with related student exercises, student activities outside the normal teaching load.*

All types of electronic material in word processing, spread sheets, Internet documents, ect. can be used.
Besides the virtual classroom, Netstudier has also a digital project room where the students can make their own project sub-groups".

The critical incident technique used in the case-study is interpreted as follows (cf. Flanagan 1954):

It is a bottom-up, action-oriented technique that starts with the participants' formulation of what they perceive to be critical actions in a given situation. It is a qualitative technique to identify behaviours (incidents) that contribute to successes or failures in a specific situation, such as the use of Internet in the construction of a learning environment in a high school.

The critical incident technique can be divided into several stages: First certain key actors familiar with a situation are identified. They are asked to give examples of what they see as effective or ineffective behaviour (critical incidents) in a specific situation. Second, based on these interviews, the researcher identifies themes represented by the incidents. Concerned persons are then asked to arrange the incidents into proposed content dimensions. More or less sophisticated methods can be used both to carry out interviews (from questionnaires to semi-structured interviews) and to analyse the materials (from intuitive text analysis to computer based text analysis), but basically the method is a qualitative method that gives the researcher subjective, bottom-up information on the situation.

Its application in this study has been as follows: First, we identified a knowledgeable practitioner (teacher) concerning the use of Internet (netstudier) in a high school. We supposed that we could get better information about actions that was theoretically interesting from such a practitioner than from an average teacher. We identified a knowledgeable practitioner in the following way: First, we addressed the head of the Headmaster's Association of Danish high schools. He forwarded our request to a computer responsible person on his own gymnasium, who then identified a teacher for us who clearly was in the forefront in using netstudier as a learning environment in high school. The teacher's main subject was geography.

We then interviewed the teacher, asking him to tell us chronologically about a specific course of events where he used the Internet in teaching. During the interview, we attempted to keep our focus on the actions taken, what happened, which activities of the teacher and students were seen as important. We concentrated on activities that were seen as having a positive or negative effect on the event. The event was a situation where one class had attempted to use netstudier as a learning environment for investigating the following problem: Has there been a crisis in Latin America recently and, if yes, in what sense? The class worked with this question on a full time basis for over a week in an interdisciplinary framework in cooperation among the subjects English, Spanish and geography.

After having interviewed the teacher, this interview was analysed in a preliminary way resulting in a provisional list of critical incidents. 10 students, identified by the teacher, were then interviewed individually, and these were also asked to report the course of event chronologically, stressing the positive and negative incidents. Most of the students had participated in the course mentioned by the teacher, but some had participated in another, similar course conducted by the teacher. This time, however, the provisional incident resulting from our analysis of the interview with the teacher were used as an interview guide, to examine whether or not these incidents were also experienced by the students. The interviews with the students were conducted by two investigators, one of whom had conducted the initial interview with the teacher.

During the interviews, we experienced some technical problems. While the interview with the teacher went very well, because the teacher was very well prepared and very open about the event and relaxed during the interview, it seemed somewhat more difficult with students. Some of the students seemed a little nervous and unrelaxed, though about half of them seemed quite relaxed. The nervous students had a tendency to talk very quickly and briefly about the event, not really reflecting upon what happened and in some way it seemed as if they were trying to give the “right answer” rather than focussing on accounting for actions. Furthermore, due to this nervousness and probably other things as well, it turned out to be quite difficult to recruit students for the interviews. Interviews with nervous students were also difficult to interpret.

All interviews were recorded, except one interview with a student, where the recorder did not work. Three of the most problematic student interviews have been

transcribed. We have then gone over the tapes. A critical incident report of each interview has been crafted, which is condensed into a number of critical incidents. The critical incident reports are attached and used as a basis for the interpretations below.

Quotations are not used to any large extent in the interpretation below. Rather, we have tried to concentrate on an account of actions as they can be deduced from the interviews as a whole. The advantage of making many interviews about the same event is that this makes it possible to cross-check the relevance of a reported incident. Quotations merely serve as illustrations of incidents. The interpreted incidents are thus in any case an interpretation of what has been said in the interview, which is a weak point. Further, investigations should make use of observations and text analysis of the files and exchanges between the students and the teacher which are saved in netstudier.

In the interpretations below, the critical incidents from the reports have been regrouped into fewer categories than in the incident reports, and this regrouping is partly inspired by social learning theory that has helped to conceptualise incidents. Social learning theory stresses features such as modelling, participation and cognitive processes. For the purpose of this report, we will not present social learning theory here, however. The regrouped incident represents actions that are mentioned in several, if not all, incident reports.

2. Main results

The incidents can generally be understood in the following way: they are requirements for the use of the netstudier / the Internet that make the Internet useful for a specific purpose (i.e. learning). Critical incidents are therefore the actions taken that make the link between the technology and the learning environment. In this way, critical incidents in the interviews are precise accounts of the relevance of netstudier for learning. These incidents say something about what action is required of teachers and students in this situation. Generally speaking, the usefulness of the Internet and netstudier are that they can empower students and teachers if used in an appropriate way. By contrast, if used wrongly, it may lead to a disempowerment of students and teachers.

Five critical incidents have been constructed from the interviews. These are all relevant to the interview with the teacher and to a varying degree with the students as well.

Incident a: Modelling the Internet. Most teachers and students do not know how to make use of the Internet for teaching and learning and do not themselves investigate this. They are dependent on the inspiration they get in a specific field of practices in which they participate. For this to happen, a model is required, i.e. an entrepreneurial person whose behaviour they can observe and imitate.

Incident b: Framing. Students and most teachers can handle the technology; they can use a computer and surf on the net. However, students have difficulties in sorting out the information they get. Therefore, information must be framed and sorted out by a responsible person (the teacher) beforehand so that the students can more easily appropriate it. At the same time, IT enables the framing of information in a new way.

Incident c: Adjustment of expectations to capacity for action: The expectations to the students in the IT-based learning environment must be adjusted to their capacities for action. On the one hand, expectations must not be too low. Students must feel challenged in order to remain motivated. On the other hand, expectations must not be too high since this can lead to frustrations. At the same time, IT is a very good tool for this adjustment.

Incident d. Setting intermediate aims. IT is a tool that can be used to set intermediate aims, and setting of intermediate aims is important for the effective use of the Internet. Hence, during a day or a week, work can be organised according to such aims.

Incident e. Feedback. IT and the Internet are very good tools for feedback to students and from students to a teacher. Feedback can be provided by responding continuously on students preliminary reports and log-books or by responding to electronic mail.

All of these critical incidents are both to be seen as requirements for effective use of IT and empowering properties, i.e. self-reinforcing elements of IT for which IT can be used. Thus, for IT to be used effectively, activities must exist in the context that activates these enabling features.

3. The critical incidents in detail

a. The modelling

In all the interviews, including the one made with the teacher, it was stressed that the teacher played a specially active role, dedicating himself to this project. He says himself that there is something here he is good at and that he has been willing also to spend a lot of hours to prepare the project for the students. Part of his effort is to organise the work so that students do not focus so much on the technology, but more on the question and content they are supposed to address. He says students know the technology and are not so amazed by the technological possibilities it offers as teachers sometimes are. Rather, students are quite sceptical about using the technology as a learning environment. Hence, the teacher must show them, not so much how the technology works, but more how it can be integrated into a learning context.

Most of the interviewed students stress the enthusiasm of the teacher. Some were very sceptical in the beginning, and remained rather sceptical throughout the assignment concerning this learning environment. “I was sceptical in the beginning and still am” a student says. Still, all students were quite satisfied with the way it worked out, and they all give credit to the teacher for this. Several also stress that other teachers would not have been able to do this, and that the important effort of the teacher was how he organised the content using netstudier. Very few stress the technical barriers of the project. One student says, however, that there were login problems on the first day, and that group fellows with technical skills had to take care of the computer work.

The teacher seems a model in several related way. For one thing, he is able to express clearly the purpose of the project and the problem students are supposed to work with. Furthermore, by setting rather strict rules for the application of the technology, he is able to commit students more to the project that to the technology, giving them a sense of direction, and distributing responsibilities. Finally, the teacher also has face-to-face contact with students during the week. The presence of the teacher and his enthusiasm for asking challenging questions leads students to concentrate on the task rather than becoming distracted by the technology as a goal in itself.

b. Framing

The framing of the content appears to be extremely important to the project. This is stated very clearly both by the teacher and the students. The teacher argues that students have difficulties in searching for relevant information, and making distinctions between relevant and irrelevant information. Students are used to work with textbooks were all the information is supposed to be relevant and "correct". Using the Internet implies that they have to select and evaluate materials in a critical way. In order to make this possible, the teacher has to pre-select a limited number of links they can work with, which from his experience with geography are relevant.

The students also agree that the framing of information has been important. They say they are not used to working with information in this independent way, but that the teacher has given them good links to work with. Several stress that the links are supposed to be a mixture of relevant and irrelevant web-sites, i.e. they constitute both good and bad information. This forces them to take a stand and make judgments about the information, which they experience as a new and challenging learning method that they are not used to at all.

Framing is thus both a precondition for working effectively on the Internet, and also at the same time a learning tool that gives rise to new learning methods, where students to a greater extent than normal must formulate critical hypotheses and distinguish between relevant and irrelevant information. The teacher says that students are not used to formulating and exploring hypothesises, but when they work in this way, selecting information from a frame, they are forced to formulate hypotheses in order to be able to distinguish between good and bad information according to their view.

Framing is time-consuming, and it is obvious that the teacher has spent a lot of time on this. "I used a billion hours." he said, and he does not expect other teachers to do so as well. Hence a problem may be that other teachers who want to use the Internet in teaching are not capable of framing due to time-constraints. The teacher also says that framing in the way it was done in this case is not always the right method. "Sometimes students should produce order out of chaos," he says. "One could imagine an assignment were they structure the information themselves." Still, the overall picture is that framing is a crucial activity because it enables students to work with structured

information from day 1 while still leaving a lot of space for a critical approach and selection of relevant information.

Some of the most ambitious students have worked with websites outside the frame, for example a newspaper database (polinfo), covering all important Danish newspapers and magazines, and some have even corresponded with a journalist who they thought had written an unclear article they downloaded from this database. The received a response from the journalist explaining the content.

Finally, the framing helps students to distribute responsibilities and give each other roles in the project group, thus creating a more effective learning environment. From the way information has been set up, it is rather easy to make a division of labour among students as to who will review what information and write which parts of the project. The frame, including main questions and sub-questions, helps students focus on the same project-idea while still dividing tasks among themselves. Several students therefore stress that framing help them to conduct group work, and the teachers says that "several investigations shows that the main problem with group work that students experience is that they feel they waste a lot of time," implying that this is not the case here. This is conferment by the critical incident reports of the students.

c. Adjustment of expectations to capacity for action

The learning environment of netstudier as set up by the teacher is meant to be an environment of creative and critical learning, as mentioned above. On this point again, we will see how adjustment of expectations to capacity for action is both a requirement for netstudier to work effectively, and a special feature of the learning environment that netstudier enables if used in the right way.

The adjustment of expectations to capacities for action is constructed in several related ways: first of all, students can, as mentioned, select among the uploaded homepages. Because the project is about Latin America and the subjects of Spanish and English are involved together with geography in the project, several websites in the frame are in Spanish or English. For some of the students, but not all, English is ok to work with, but Spanish generally appears to be more difficult. Hence, websites are not just evaluated with respect to whether they are relevant or not, but also with respect to students capacities for action, i.e. whether or not they are too difficult to read, or not.

This also goes for articles in Danish using a technical language in, for example, the field of economics and so on that the students feel are too difficult for them to use in the project.

On the other hand, some students also can pursue their interest and move beyond the frame. Some students have, as mentioned, looked into a newspaper database and contacted a journalist over email, and others have tried to find statistical information about unemployment in Latin America. According to the teacher, there was here a risk that students let themselves "carry away" with ideas that could not be realised. Hence one student set out to find unemployment statistics concerning Latin America. This turned out to be an impossible task, but the student nevertheless worked on this for several days.

Hence, the adjustment of expectations to capacities for action is an activity that goes in two directions: It eliminates information which is too difficult and frustrating to deal with, and it makes it possible to search for more information if the given information seems attractive to the student. Adjustment is both a restricting and expanding activity that makes it possible to reduce frustrations and produce challenges in the learning environment.

Indeed, most students have been using the adjustment possibility mostly in the negative sense, to eliminate materials that were too difficult. There is a certain danger, which is expressed both by students and the teacher, that the possibility for adjustment may lead to distraction. One student says that a negative aspect of netstudier compared to traditional teaching is that it "may be distractive". You are tempted to look after websites that are interesting in a general sense or check and send e-mails all the time. You may have "difficulties in staying focused" when you are online, "just like watching television when studying". Thus, too much adjustment abolishes the advantages of framing.

d. Intermediate aims

The students were supposed to write a log-book every day. In the log-book they wrote what they had been working on during the day and what they were planning to work with the following day. If they had questions for the teacher they could write them into the log-book as well.

All the students and the teacher mention this log-book. It seems to have served two purposes, to get feedback (cf. below) and to create intermediate aims and organise work during the day. As to the latter, it made it possible also to compare between the groups how much work was done in each group so as to keep abreast with other groups. All log-books were uploaded on the netstudier and students could read each others log-book across the groups as well as the teacher's reaction to them.

More generally, the ability to take action to effectively organise work during the day was an important incident. All the groups quickly learned how this could be done. During the morning the first day they browsed through the links they all agreed to divide the links among them according to interests. Each group member became responsible for a certain number of links, did the selection of relevant links among them and printed them on the printer so that they could be used in the study.

In this way, netstudier helped to create more transparency in the group work. Students could set up a plan, compare this with the plan of other groups, distribute responsibilities among themselves and evaluate what they had accomplished.

Again, the use of the Internet to set up intermediate aims requires that teachers and students work consciously with this and devote time to this. It is not an activity that grows "naturally" out of working with the Internet, but is only present if people require this of each other. Other teachers in the high school were, according to the teacher, not so dedicated to this. Furthermore, this learning environment does, according to the teacher, not necessarily suit the working style of a specific teacher. Teachers are different, and they should not be obliged to work with this tool. Our impression from the interview is also that students are different. Some of the students expressed that books were more important to them than the Internet, and could create a more focused and concentrated working environment.

e. Feedback

Apart from framing, feedback was perhaps the most important incident to all parties. Hence, the teacher gave extensive electronic feedback on the log-book and on e-mails during the day. Everything that was sent and uploaded on netstudier could not be deleted again, and therefore students had to think carefully about what they were sending, and what kind of feedback they would like to have.

Students had a very positive experience of the teacher's ability to give feedback using the netstudier. He gave quick and precise feedback to the log-book and quick responses to mails and questions sent during the day. Several students expressed that this was extremely good. The teacher argues that this way of interaction calls on other students than those who are normally active in the class, and this is conformed by several students. Furthermore, the fact that they have to work with written feedback (questions and answers) makes a clear difference. Questions become more precise and well prepared and the response from the teacher is also better prepared and is retained in files to be consulted and consulted again. Furthermore, students can observe the feedback that goes on between the teacher and other groups, thereby learning through observation.

Nevertheless, according to the teacher and several students, this kind of feedback has to be complemented by face-to-face relations. First and foremost, the feedback relation would not work if the teacher did not know the students, how they usually behave and what their idiosyncrasies are. The teacher's knowledge of the student has an impact on the way he responds to them by mail. He knows that certain groups, for example a group of boys that clearly prefer soccer from netstudier, cannot be pressed more than to a certain point without loosing interest.

Also, the teacher moves around among students from time to time. He does not interfere directly in their work, but he is visible, and if some students want talk to him, he is available also for this.

The key to effective feedback is a mixture of well-preparedness and quick responses. Again this has something to do with the way students normally experience group work. According to the teacher, as mentioned, group work is often experienced as a waist of time, because groups will sit and wait for teacher to come and answer questions that are not always well prepared or well remembered. Or students will have to look up the teacher somewhere on the school. Here, they do not have to wait so much, because they can get answers on the net, and all answers are well prepared and retained on the net.

4. Evaluation of the critical incident technique

In this report, the critical incident technique has been used to investigate the situational competencies required for the use of a self-service technology in education. The

approach makes it possible for the researcher to collect detailed information about concrete actions required in a specific context where people use the self-service.

This research gives insight into what people actually do and find meaningful in a concrete situation rather than what they are supposed to do. The method is a way to examine bottom-up which knowledge and competencies are required to undertake an action effectively in a given field. In a practice-based perspective, situational competence can be defined as knowledge, which is closely intertwined with effective action in a practice field rather than separated from it as formal knowledge. By using the critical incident technique we have been able to collect information about such actions and thereby move beyond studies that simply intend to state the importance of practical knowledge as such. Situational knowledge, as conceived here, is not understood as a kind of tacit knowledge, which cannot be described. What we propose here is that, by using the critical incident technique, this knowledge can be described in terms of requirements for action in a given situation.

The critical incident technique can be used in a research perspective that wants to study situational actions in an interactive framework. Hence, the method is relevant when one understands actions as mutually interdependent in a framework where actors occupy positions in relation to each other and mutually define each other. This perspective is important in the study of all kinds of services. Services as well as self-services are constituted through human interactive actions that can often be difficult to codify in an abstract way. In a self-service society, it becomes important to evaluate the character of such knowledge, as it is crucial to the society. The critical incident technique is a way to approach this knowledge and improve our understanding of it.

Situational competencies have been recorded through interviews where interview persons were asked to tell us about a chronological sequence of events rather than their feelings about a situation or their attitude towards it. In the present case, we have asked a teacher and his students about self-service incidents during learning. By means of our interpretations we have condensed these incidents into broader categories as well. In this way we have tried to collect knowledge about the requirements for action in the concrete practice where actors have been using a self-service technology.

There are nevertheless several weak points in the way we have proceeded here: For one thing, actions have been reported only through participants' interpretations as well

as our own interpretation of these interpretations. In this case study, we have not made use of observation studies, but only tried to collect information through chronological story-telling about an event. The interview person may have been affected by the situation of the interviews without us being able to notice this. For example, interview person that seemed nervous may have tried to give us the "right" answers, as they want them to be (or think we want them). We have tried to avoid this by focussing strictly on the chronology of events, but have, as mentioned, not checked the accounts resulting from this against observation studies. The method should therefore, in our opinion, be extended with observation studies, for example by means of a video-recording of participants' use of the self-service. Furthermore, in this particular case, but probably in other cases as well, there are extensive opportunities for making text analyses of the participants' exchanges on the Internet, because these exchanges remain saved the files of netstudier.

Some of the shortcomings have been overcome by interviewing several persons individually about the same sequence of event. We can check the accounts against each other. No strong contradictions between incident reports seem to have occurred in this case concerning what actions were remembered as relevant. By interviewing several people about the same sequence of events, we get more plausible knowledge about that situation.

The interviews, as they have been made here, are generally important for such a study despite the weaknesses, because interviews lead the researcher to formulate hypotheses about incidents that can be further investigated. Hence, the method has been effective in our attempt to formulate preliminary hypothesis about situational competencies and self-service.

Once hypotheses have been formulated we find it crucial also to make use of surveys and statistical analysis to be able to conclude something on the importance of the discovered incidents more widely throughout society, especially also in order *to identify opportunities and barriers for the development of such situational competencies by various groups of actors*. The present case study is one that takes its starting point in an advanced case with an entrepreneurial person, a frontrunner. Therefore, it does not tell us much about opportunities and barriers to the development of the situational competencies more broadly, for example among senior citizens.

The above-listed incidents (cf. section 3 of this case report) are examples of such mechanisms that make it possible for the self-service to function in a meaningful way. These incidents, as they have been recorded, are actions that reinforce actors in their abilities for action in relation to the self-service. Furthermore, even though they have to be activated in a specific context, it may be assumed that they are relevant to other contexts as well.

5. Conclusions

The critical incident technique has been used to collect information about specific actions in a given service-field, to see what situational competencies were required for this field to function in an effective and meaningful way for the involved actors, that were using a self-service technology.

The critical incident technique is especially relevant as an instrument to collect information about knowledge, which is closely intertwined with practice, such as it is often the case in services and self-services. While other methods are probably needed to collect information about for example the use of formal knowledge, the critical incident technique is generally relevant for an action-oriented, practice-based approach and the study of situational competencies.

As applied here, the method was based on interviews. By interviewing several persons about the same event, it has been possible to get plausible information about which actions were important to that event. Observation studies and video-recording could, however, be a way to collect more plausible information. Another important method that we strongly recommend for future studies in this area is text analysis of the exchanges that have being going on. These exchanges can be found in the files of netstudier.

Based on this technique we were able to formulate five hypotheses concerning the required situational competencies. Surveys and statistical analysis must be used to study further the importance of these critical incidents. Such a study should also seek to identify opportunities and barriers for the development of these competencies throughout society. The present case study is one that takes its starting point in an advanced example. It does not, at this stage, tell us much about opportunities and

barriers to the development of the examined situational competencies more broadly in society.

Case 3: Business to consumer – Web-based self-service and e-competence

This report documents the findings from a pilot study, carried out in the spring of 2003, regarding the suitability of the so called CIT method to study user competence in web-based self-services. It is structured in the following way. First, we briefly discuss the definition of the competence construct to be used. Second, we outline how data collection was carried out to gauge the competence of new web-users of a Danish internet bank. Third, we summarise the main findings.

Competence.

The basic premise of this note is that Flanagan (1954) already has defined the competence construct sufficiently for us. What we need to do is to make explicit our different research settings for the coding of behavioural outcomes. Here are the reasons.

First, let us recapitulate what an incident is defined to be, namely "… any observable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the person performing the act (ibid p. 327). To be a critical incident it needs to "…occur in a situation where the purpose or the intent of the act seems fairly clear to the observer and where its consequences are sufficiently definite to leave little doubt concerning its effect" (ibid p. 327) and: "… if it makes a "significant" contribution, either positively or negatively, to the general aim of the activity" (ibid p. 338). What we have is: an act with a purpose and its effect of that act in a situation. What the CIT wants to do is: "elicit effective and ineffective behaviours (ibid p. 332)".

Consequently, competence can be defined as those behaviours (in a critical incident) that are effective. Incompetence is the reverse. The degree of competence is the relative share of effective/ineffective behaviours over a number of critical incidents. These can be prototypal in the sense that typical and difficult tasks for the self-service user are studied across a number of users. What is needed in the analysis is then to clearly single out actors, actions and the purposes of those actions to arrive at an interpretation of the degree of effectiveness for each action. The unit of analysis is then the string or sequence of: *purpose, actor, action, effectiveness/no effectiveness*. These strings are linked to each person or respondent across a number of incidents. The most difficult

part of the analysis is probably to decide if (and when) an action is effective or not effective. Explicit criteria for this may have to be decided on for each specific situation. Coding can be (+) or (-). Compare Flanagan (1954, p. 335) "… all observations are evaluated by the observer in terms of an agreed upon statement of the purpose of the activity")

In our application we have stated that we consider competence to be*: the ability to handle the relationship with the self-service provider*. This can be construed as both the handling of the web site when performing the self-service AND/OR the total communication and interaction (online or offline) with the provider.

Data collection.

In this pilot study, we have narrowed the situation to how users manage the Lån& Sparbank web site and how they get access to e-services. In a narrow sense then, if a user is unable to perform a task on the web site it will be an incident that comprises ineffective behaviour and consequently, a lack of competence. This functional approach to competence is close to what is normally meant by the word competence, the ability to make use of knowledge or information. Here knowledge/information is in the form of a virtual system in which a service can be provided. Competence can therefore be induced from how users deal with web sites.

One practical decision is then to decide how and what kind of data on the critical incidents are to be collected which is a key feature in distinguishing between different CIT methods (Roos 2002). We have attempted to use a web survey with both quantitative and qualitative parts and a follow-up interview. We have linked evaluations of different web elements (web metrics) of the e-service to how users describe their incidents retrospectively. The follow-up interviews (with some 24 respondents) have added more detail on the process of how the tasks were carried out. This was thought to explain certain problematic and general sequences and how one may remedy the structure of the interface.

The web survey (See appendix 1; N=115) included questions 24-29. It was based on the metrics developed by Palmer (2002). The respondents were asked to write (in their own words) about the sequence of a recent episode about a particular satisfying or unsatisfying incident that occurred the first time they logged on to the internet bank.

The sequence was meant to standardise the responses to make it easier to code the string of variables associated with Flanagan's view of the competence construct. Consequently, each one of the questions gives rise to a variable coded from the text. No 24 relates to the aim of the web activity, that is, what the respondent set out to do. This aim is coded in four categories, a positive or negative application (problem) or a positive or negative communication (problem). Question no 25 concerns the emotional reaction and was coded positive (e.g. happy) or negative (e.g. irritated). Question no 26 specifies what kind of positive or negative action was taken, either by the user or by the bank. The outcome, in a positive or negative sense, is coded from the responses from question no 27. Finally, what is here construed as *situational competence* is coded positive or negative. The reasoning and the criteria for this are the following. According to Flanagan (1954) action that effectively fulfils the general aim of that activity depicts competence. Hence, if the user (coded positive) undertakes effective action (outcome positive) in handling the aim (problem) of the web activity, the recorded episode is coded as illustrating situational competency.

The interview was carried out less than a week (on the average) after the web survey had been completed in March 2003. Those respondents (with less than three months experience) who had answered positively to participate in the survey (with a chance to win a cash prize) were contacted by phone by a research assistant according to a fixed format (see appendix 2a and 2b). All conversations were recorded and compared to the written answers. Coding was then carried out by two researchers independently. Reliability of coding was estimated by correlation. Further a PERTEX analysis was carried out (see Helmersson and Mattsson, 2001 for a discussion on how this linguistic method operates). Both partial and accumulated responses to the CIT questions were analysed.

Main findings

Critical incidents are normally investigated with traditional face-to-face interviews. Here a survey-based approach was attempted. A clear pattern evolved. New users had more text and more complex stories to tell. The rate of completing the qualitative questions were close to 90 % for new users, whereas older users (more than three month's experience) accomplished the same questions to a 50 % extent (the difference is

statistically significant at the 5% level). The conclusion can be that more experienced users tend to forget the initial episodes and cannot easily account for them. Therefore, a brief time lag (perhaps as short as a week) between user experience and data collection is a requirement for CIT purposes. Albeit, few words were used to describe episodes, coding could mostly (70%) be done without listening to the taped interviews. However, these interviews ascertained coding and gave extra information especially regarding the emotional reaction of users. These emotional reactions were clearly divided in two types: irritation (-) and feeling of accomplishment (+).

Inter-coder reliability was assessed between two coders working independently on the answers to questions 24-29. As explained above, the following categories were coded: positive or negative application (problems), positive or negative communication (problem), positive or negative reaction, positive or negative customer action, positive or negative bank action, positive or negative outcome and finally situational competence or non-competence. Reliability measures were calculated as the percent of agreed upon codes out of the total number of codes assigned. The following percent agreement between coders signal acceptable reliability: 91, 65, 100, 70, 90, 91, 82, 82,100, 71 and 100. The conclusion is that standard "free" category coding can be done regarding situational competency of web users. A more advanced and structured qualitative coding was then carried out.

PERTEX results were generated for all 24 interviewed respondents by accumulating all their survey texts for each one of the questions 24-28. This was done to summarise key thoughts on each one of the CIT questions. Detailed results are not presented here. However, negative and positive opinions could be clearly differentiated in the cluster trees. The practically orientated questions, 27-28, yielded the most discriminating positive and negative results. This may be explained by the rather *concrete* texts produced as to what respondents actually did. All in all, accumulated texts from a very heterogeneous sample could be handled by PERTEX.

The sequential structure of CIT questions seemed to work well. Nearly all respondents followed the standard and answered partial questions no 24-28 "correctly". This makes it possible to compare "sub-accounts" of a larger sample of critical episodes and facilitates coding or interpretation. Answers, as mentioned above, were in general

rather short, but precise. We may speculate that "web speak" (short and precise) is now common among internet users.

Interviews (N=25) were carried out during two evenings with 24 (one refrained from taking part) new users. They lasted 2-5 minutes. Most respondents remembered the episode they had written about, but a few needed a reminder. Positive emotional reactions now became much more clear. Respondents who were positive had not expressed in writing their degree of positive feeling very clearly. This now changed. All in all, interviews were effective when focussed on a simple and pre-arranged episode. Some examples of responses over the telephone are given in appendix 2b.

The quantitative part of the web survey was analysed with SPSS and LISREL 8.30. A few significant models were developed (see appendix 3) with less impressive indices of Goodness-of-Fit (e.g. RAMSEA and GFI). The best fitted model reached no more than RMSEA = 0.10 (and NFI= 0.91 and CFI= 0.94) and most models were in the 0.12-0.16 range (good fit would be indices of less than 0.10). The models indicate that what is most important to new users are the *navigation* features that directly impact (loading 0.75) intention to *return* to the site (bank). The latent construct comprised questions 8-12 (see appendix) and referred to the layout, sequence, arrangement and organisation of the Internet bank. The latent construct *information content* did not have a robust impact (loading 0.16 but not significant) on intention to *return* but was included in the final model. An alternative model based on weighted least squares estimation (WLS) produced a similar model with *navigation* (same indicators as the first model) and *information content* (also the same indicators) impacting web site *success* (with loadings of 0.68 and 0.17 respectively). *Success* was construed by indicators drawn from questions no. 21-23 comprising satisfaction, frequency of use and likelihood of return (See appendix 3).

Re-scaling responses (for the item scales such as the attempted WLS estimation) did not improve overall model parsimony and fit. An explanation for this could be that the assumptions for LISREL modelling were to some extent violated (e.g. normal distribution of indicators). This can be translated as follows. Those new users had little experience and tended to "overreact" when evaluating the web features of the internet bank. Either scores were very low or very high. Logistic regression was attempted but did not produce any substantially better results. Cluster analysis revealed three

significant clusters comprising; more experienced and negative users (N= 24), non experienced, but rather positive users (N= 16), and a middle group with evaluations ranging in-between the other groups (N= 75). It is interesting to note that the more experienced users had a more negative evaluation of most web features. However, neither sex, nor age could discriminate between groups. All in all, the quantitative part did not work out as intended. This could be explained by the lack of experience in evaluating web bank operations.

Overall evaluation of the "indirect" critical incident approach used

The idea behind the critical incident approach is to benefit from the trade-off between quantity and quality in collecting data. By concentrating on a certain crucial event and the behaviours displayed by social actors, more in-depth (or quality) knowledge can be gained about social phenomena. On the other hand, traditional and contextual information (or quantity) is paid less attention to. When evaluating how well the "indirect" critical incident approach worked this simple assumption must be remembered. We trade off *much* data for *better* data. Why do we then need a critical incident approach to collect data on competence?

In this pilot project competence was defined in a narrow sense and linked to precise e-behaviours. We have construed "situational competence" as the object of study. A necessary requirement of situational focus becomes obvious. In order to map micro-behaviours and the simultaneous reactions of the respondent (and other involved actors) a precise format is needed. The critical incident approach gives us this format and enables the researcher to probe the respondent in a consistent way. Actions, reactions and positive or negative outcomes can be *linked* by generating focussed descriptions. It is this linkage which becomes crucial when building theory on competence. Combining two different methods of "indirect" questioning (survey and telephone interview) we were able to ascertain these linkages in a multidimensional (verbal/rating and voice) way. This adds richness and flavour to data and complex events can be better understood. These are the essential arguments in favour of using a critical incident approach in this pilot study.

All in all, comparing the quantitative survey with the verbal open responses, more knowledge was gained from the CIT questions than from the statistical procedures. Let us recapitulate how the responses were given.

First, the sequential structure of CIT questions seemed to work well. In general, respondents answered the partial questions "correctly". This made it possible to compare "sub-accounts" of a larger sample of critical episodes and facilitates coding or interpretation. Second, answers, we remember, were in general rather short, but precise. In this manner we could more easily build theory by structuring responses and then comparing them within this structure (sequential). Third, there seemed to be no difficulties in expressing and verbalising emotions. These emotions could then be easily ascertained in the subsequent brief telephone interviews (during two evenings). They lasted 2-5 minutes. Respondents remembered the episode they had written about. Positive emotional reactions now became clearer. All in all, interviews were effective, both with regard to duration and content, when focussed on a simple and pre-arranged episode. Therefore, the evaluation of the "indirect" critical incident approach used here must be clearly positive. It was possible, in a very cost-effective way, to tap focussed and very personal experiences about a singular episode of using an internet bank by a web-based survey and a brief telephone conversation.

Appendices

Appendices of Case 2: critical incident reports

A. Critical incident reports for teacher

1. A question about crisis in Argentina is brought up in the class by the students. Is there a crisis and in what sense?

2. An agreement is made in the class to use the Internet for exploring this question in the form of a one week assignment. Argentina is expanded to Latin America. Students must work in groups and finish by writing a report on the topic.

3. Students also agree to this because an arrangement is made between Spanish, English and geography to let this assignment replace several other assignments.

4. The class will explore the question using the virtual learning environment of netstudier to which the students have already been introduced.

5. Students have no technical problems with this environment. No problems of logging in and find their way around.

6. Student groups are formed on the basis of chemistry among students. Each group is assigned a country in Latin America. The fact that students know each other well is stressed as important for this.

7. The teacher foresees that students cannot find the relevant information, therefore he must set questions and links in the system. He spends a lot of hours doing this so that it is ready Monday morning when the assignment starts.

8. Links are grouped in countries, and the assignment and sub-questions are also uploaded in the system before start.

9. Not all links are relevant. Some are very difficult and others irrelevant. This is done consciously to challenge the students. They have to select the relevant information, but based on the links set up by the teacher. This can help students to be more critical and to formulate hypothesise. Otherwise, students are usually very uncritical and believe what the teacher says.

10. The teacher is a kind of model for the other teachers and for students. For example, other teachers are not good at giving students specific tasks using the Internet; they are merely fascinated by the technical possibilities and leave it there. But this teacher distributes specific tasks and responsibilities that must be accomplished each day. One important task is the log-book that students must write every day. They write about what they have accomplished and what they want to do the next day.

11. The English and Spanish teachers are not so active because the assignment tends to focus on geography. Students refrain from using links with English or Spanish texts, because they are too difficult for them.

12. All log-books and mails remain on netstudier and cannot be deleted. Hence, students must think about what they write, because it cannot be removed again, even if they regret it.

13. The netstudier seems useful for quite students. Students that are normally quite are more active writing questions. Written questions also appear to be more precise and well prepared than oral questions.

14. The teacher responds quickly to log-books and emails so that students feel there is a good and immediate feedback. This is a clear success, because it informs the project work so that students to a lesser extent than normal feel they waste time.

15. Students tend to forget the overall goal of writing a report. They also seem to be a bit sceptical about submitting the report electronically. During the writing of the report, some students had a tendency to get carried away on the Internet, looking for information they could not find.

16. The final report is better than usual reports. Students are asked to rewrite the report, based on the comments they receive. Some students are a bit disappointed with the result, given all the energy they have put into the project. The reports are also given to another class which is asked to rewrite it.

B. Critical incident report for student 1

1. One day the teacher assigned a subject that should be explored in groups using net studier, namely the question of whether, and in what sense, there was a crisis in Latin America. The assignment was very interesting. It was a one-week assignment.

2. The teacher also decided how the project groups should be made.

3. There was a little but not much introduction to netstudier by the teacher before the start of the assignment.

4. Monday morning, when the assignment started, there were some problems concerning how to log in on netstudier. The boys in the group took care of the technical problems.

5. The teacher had prepared the assignment very well by uploading good links on netstudier. The students used these links and did not discover some on their own.

6. Students in the group divided the links among each other to review them an identify relevant links

7. Students wrote log-books and the teacher gave very good feedback on these, which was very useful and very different from a usual class.

8. Nevertheless, the students in the group felt sceptical in the beginning about this work form: it requires a lot of energy to learn a new work form. Things are not as they use to be.

9. But the essay that was written was nevertheless very good, and retrospectively it was a very good working form, because of the feedback and the links set up by the teacher.

10. This work form may be used in other subjects as well, but probably other teachers in the school will not or are not able to work with it.

C. Critical incident report for student 2

1. The teacher made an assignment about Latin America, growth or crises. The teacher divided students into groups. Groups focussed on specific countries.

2. The teacher made, on netstudier, a scheme with links. Each link had a kind of intro. For some links there were new sub-links with more intro. Each link had a theme, such as economics or politics.

3. Before they started with the assignment, the teacher showed them how it all worked with the links.

4. Monday morning they checked in and the groups met. Then they logged in on netstudier. On the Internet, the teacher had given specific requirements for the work. They started to read the links and identify the relevant links.

5. This group focused on the role of the World Bank and the relation between USA and Argentina and strategies of other countries. This was something the group discovered as relevant topics while they browsed though the elinks.

6. You were supposed to write a log-book that the teacher and other students could look into and make comments on.

7. The teacher gave electronic feedback on the log-book, which was experienced as very good.

8. The teacher also circulated among them face-to-face. The best is still to talk with the teacher, but it is a good idea with a log-book. It makes it clearer what they have been doing during the day and how they can proceed.

9. There were no technical problems during the week except that they had problems with uploading the essay at the end.

10.Netstudier is a good form for group work. But, for some groups who were not so interested, it did not turn out so well.

11. Strong points were that they could communicate with the teacher. It was good with the links as well, but perhaps unrealistic for the future, since it seems to require a lot of the teacher. The essay in the end was ok, especially after the teacher had given some feedback on a preliminary draft.

D. Critical incident report for student 3

1. Students were divided into groups. Students divided themselves into groups and were assigned a problem about Latin America as well as a Latin American country to study by the teacher.

2. A question was given and a number of links set up by the teacher. The group looked through the links to see how the research question should be formulated. In this way, the links steered the research question, which was seen as a very good way to proceed. Most links were about economic relationships, and therefore the group worked on that aspect.

3. Some of the links were rather difficult to understand.

4. This group had one girl, the rest were boys, and boys had a tendency just to go into this, while girls were perhaps more sceptical. This was, however, not a problem for this group, but seemed to be a problem for others.

5. The groups divided links among them. Each person was responsible for a number of links, to select among them, read the relevant links and print them.

6. The group contacted a journalist about an article of the journalist they had discovered on the net but did not understand. They sent the journalist and e-mail. She responded quickly to them, explaining the article

7. Students wrote in the log-book, with what they had been doing during the day, and what they planed to do the next day. The teacher responded to the log-book which was very good.

8. Students did not identify links on their own, except the contact with the journalist.

9. The links provided by the teacher made work much easier. The links as they were structured also meant that the groups answered the questions in different ways. It was a strong point that the research question in this way provided by the links that gave a structure for the assignment.

10. Some links were too difficult to read and had to be dismissed for that reason. Student dismissed links if they did not understand the language or content or found it irrelevant.

11. Students also had face-to-face interaction with the teacher. But the teacher also gave feedback over the net very quickly.

12. Netstudier may be good for group work and project work, especially because it is a good way to structure the materials and get quick feedback from a teacher.

E. Critical incident report for student 4

1. The teacher has throughout been very IT-oriented. The school had just started using netstudier. Several schools use this, and all subjects are included (geography, math, language etc), but not all teachers use it.

2. Students were introduced to both netstudier and to Latin America in due time and were then assigned a general research question. Students were then divided into groups to 4-6. Students then chose a country to work with.

3. Monday morning when the assignment started the teacher showed them how netstudier worked and gave them a brochure about net studier. The teacher prepared the links and the assignment took the starting point in the links. This saved a lot of work.

4. Students browsed through the links and reduced the links to links that were relevant and interesting. It took some time to read them. They printed the articles, those that were relevant.

5. Students also searched other links than those set up by the teacher, using a newspaper database and google, and they were able to find relevant links.

6. They divided articles among themselves and then discussed the results of individual selection and reading in the group as a whole.

7. Students wrote a log-book where they reported what they had been doing and what they planned to do the following day.

8. The teacher gave feedback on each log-book. Students and teachers also communicated in the forum. Both log-book and communication could be read by the other students as well. This group also read what the other groups wrote and what the teacher answered. But did not answered the others' question.

9. Feedback was quick also one day when the teacher was ill, he loged on from his home. There was also, each day, a special time where they could meet face-to-face.

10. In the log-group and in e-mail they mostly ask about concepts, and there was a tendency to formulate questions more precisely when using the net. Also, by having exchanges on the net, perhaps more students asked questions than in the class.

11. There were no serious problems during the assignment. No technical or other problems with netstudier.

12.The whole class had been very sceptical in the beginning, and this student was also sceptical, because, among other things, it required extra work to use netstudier for the first time.

13. Scepticism disappeared, because it turned out to be an effective way of organising group work, particularly because you can ask questions, even when you work at home.

Also, you can compare yourself with other groups better, by following them on netstudier.

14. The project was very dependent on this particular teacher. The other two teachers were not much involved.

F. Critical incident report for student 5

1. The teacher started this because he was very interested in IT and this was very atypical.

2. The teacher had organised links, but the big difference was that students themselves should critically analyse the information. This was different from a textbook where the information is already digested.

3. Students were first introduced to netstudier. The problem and questions were assigned to them by the teacher.

4. There were technical problems

5. It was easy to get feedback from the teacher. Normally, you have to find the teacher somewhere in the school. Electronic feedback was much more effective.

6. The application of netstudiere is effective compared to the way group work normally works. Also boys are much more attracted to this.

7. The links that the teacher had made were all a very good starting point for the project-work even if they were insufficient and had to be complemented.

8. Students wrote a log-book, but the log-book was not very precise.

9. It should be obligatory to use the Internet rather than simply use text books because you get more up to dated information and it is a different way to get information because you need to evaluate the quality of the information.

G. Critical incident report for student 6

1. This group of students preferred to work with books. They saw netstudier as a supplement to working with groups. They used netstudier to get feedback on the books they collected. The student worked at home during the assignment.

2. The students used the links set up by the teacher, but they also searched for other links, though not with significant results. There is a lot of rubbish in cyberspace.

3. They then turned to read some books as well.

4. Students wrote their log-book and got feedback the same evening. They used netstudier to send questions to the teacher during the day and it took up to about two hours to get feedback.

5. Students had no special problems in working with this. There were no technical problems.

6. Students finish by writing a report which was of a good standard.

7. The students looked into other reports in netstudier to see what the others were doing. Sometimes they also look at the exchange of information between the teacher and the other groups, to see how the others are doing to get an idea of what to do themselves.

8. The advantage of netstudier is that it is more efficient even though it can sometimes be more irritating. It can be used for a project work but not in regular teaching. The structure and energy provided by the teacher was crucial.

9. A disadvantage can be that the internet is distractive. You may look for things that you cannot find or read materials that are not so relevant. You can always find more on the net and this can be a waste of time. Often looking for something completely different, sending e-mails or playing games on the net can also distract you. You have to discipline yourself to remain focused.

H. Critical incident report for student 7

1. In the beginning students agreed to use netstudier in the class in general. There was a vote on this in the class. The reason for deciding this was that everybody except two students had access to internet at home.

2. The first assignment they had using netstudier was a project on the concept of globalisation.

3. They first read a book on the subject and discussed various sub-themes.

4. Then they were introduced to netstudier and everybody tried to log in and use the netstudier before project start up.

5. The teacher collected links about the topic and these links were grouped according to sub-themes. The links were a very good starting point for working with the assignment over one week. Students wrote a log-book, and the teacher gave feedback to this very quickly. This is seen as very positive.

6. Many of the links were in German and English which made it more difficult to work with. Students divided links among them and then talked about the links to decide which links were relevant for the project.

7. It was a bit irritating that not all links were the right links. One could spend half an hour reading a link and then it turned out that it was useless. But this was a conscious strategy by the teacher making students more critical about the source-materials

8. The feedback was very good and written feedback on the net also ensured that students wrote more precise questions and the teacher wrote more precise and well-prepared answers. Furthermore, you will not forget answers, because they are in the

files of netstudier. The teacher was good at responding. Also, he continuously gave them new links that they could work with.

9. Students went beyond the links that the teacher had discovered to find other relevant links. They also found a BA dissertation on the Internet. But this was too difficult to work with.

10. Sometimes there was a tendency to waste time on the net reading materials that was useless.

11. Student read each others log-book to compare how they were doing.

12. Furthermore, it was nice that all the materials were available on netstudier, rather than being distributed as photocopies.

13. Students did not have any technical problems. But one may become tired from looking on the screen. Often, on the blue corridor where people use computers, one becomes tired and distracted. It can be difficult to concentrate over a longer period.

14. Generally, the Internet is effective and can give everybody the same basis for working with certain materials, but there must be a teacher who can give them the same frame. Otherwise you get confused.

15. Student reports are still in netstudier, and often students log into netstudier in order to see the report of others.

I. Critical incident report for student 8

1. This student worked with the Internet to analyse a crisis in Southeast Asia. It was a continuation of an earlier assignment.

2. Together with his project group, he used netstudier to communicate with the teacher. They wrote to the teacher to describe what they had accomplished. Most of the time they worked from the computers at the school.

3. The students were supposed to formulate a problem to be approved by the teacher. The teacher collected links for them on netstudier, and when students had problems, they asked the teacher to find new sites for them. The teacher gave quick feedback on this.

4. The group searched for newspaper articles by themselves.

5. Sometimes the feedback from the teacher was not so relevant. Websites in English language were often too difficult. But generally, the response was helpful.

6. A piece of feedback from a teacher could consist of an interpretation of the problem and its solution and a couple of links to go on with this.

7. It would not have worked out as effectively without this feedback, even though students eventually might have found links.

8. It was important that the teacher provided a framework and feedback. This also put pressure on students and made them keep focused. Important also that after each day they wrote a detailed log-book that the teacher responded to.

9. Students had no technical problems using netstudier.

10. The student was trying to find statistics about rise production, but the teacher did not think the information he found was good enough, and he came up with some links that were better.

11. Students mostly searched on their own in a newspaper database, while the teacher gave them links from many more sources.

12. One problem was that there is so much information on the Internet that is useless. But generally it is easy to use the Internet because students are used to it. Without the help of the teacher it would not have worked out.

13. The use of netstudier was important for the quality of the essay that the students submitted.

14. In the group, they distributed tasks among themselves, and each person critically reviewed a number of links related to that task. Individual students wrote the different parts of the report.

J. Critical incident report for student 9

1. Eleverne arbejdede med projekt om Sydøstasien, bl.a. klima og vulkanisering. De havde 2-3 uger til deres projekt. De arbejdede med det i geografitimerne. De fik tidsproblemer, men blev dog færdige til tiden.

2. Det var ikke absolut krav at de skulle bruge Internettet, men der var forventninger om det. De kunne bruge den interne internetside på skolens web-site, hvor de kunne se rammerne og oplægget til projekterne. De kunne kommunikere med læreren via e-mails.

3. Læreren havde lagt en række links ind på den interne net-side. Uden det var det aldrig gået.

4. De tog meget tabeller, tal og faktiske informationer fra web-siderne, men kopierede ikke tekstpassager af. De fandt dog forskellige synspunkter på det samme emne. Det brugte de.

5. Det var et krav at de skulle skrive til læreren via e-mail og rapportere om, hvad de havde gjort, hvilke resultater de havde nået, og hvad de ville gøre fremover. Da de startede projektet syntes de at det var stressende og irriterende og en masse ekstraarbejde. Men læreren gav respons og besvarede deres spørgsmål. F.eks. spurgte de om, hvilke databaser, de skulle bruge til at søge nogle bestemte oplysninger, som de

ikke syntes de kunne få ordentligt belyst via de databaser, der var opgivet, eller som de selv kunne finde frem til. De havde været inde på nogle af de opgivne databaser uden at finde ordentlige informationer. Læreren svarede så på det (gav dem nogle links til relevante databaser) - vistnok sent om aftenen, så læreren sad oppe sent for at besvare dette. Da slog gruppens stemning om og de syntes det var en god idé, at de skulle melde tilbage efter hver time. De kunne se, at de fik hjælp.

6. Senere i forløbet oplevede de en episode, hvor læreren gav dem nogle links. Det var nemt, men lidt et problem at nogle af databaserne var på engelsk. Men værst var det, at læreren gav dem så mange links. Det var en barriere, men de kom over den. De lærte at tænke selv og sortere oplysningerne og vurdere hvilke oplysninger, der var relevante. Hvis det lød for kedeligt, brugte de det ikke, men gik videre til en anden. De opøvede en evne til hurtigt på overskriften at spotte, om det var kedeligt. Kedeligt var det, når der ikke var mange informationer eller synspunkter. De begyndte også at spotte forskellige synspunkter (om artiklen var liberalistisk, socialistisk eller andre vinkler). De blev derved gode til at skanne kilderne.

7. Mange af de andre elever syntes, at det var irriterende at bladre rundt i de mange websider. De blev ikke fortrolige med det eller lærte ikke noget af det.

8. Eleverne fik en mundtlig tilbagemelding på opgaven fra læreren, dog kun om indholdet, ikke om deres brug af Internettet.

9. Der var til sidst i forløbet en afstemning blandt eleverne om det havde været godt at bruge Internttet. Han kan de ikke huske resultatet, men de fleste var positive. De fik dog aldrig diskuteret dette, hvilket de var utilfredse med.

K. Critical incident report for student 10

1. Eleverne fik en opgave, som andre havde lavet. Så skulle de forbedre den (dvs. de skulle lave en ny opgave). Projektet handlede om Brasilien og problemstillingen var om landet var i vækst eller ej. De var en gruppe på 4. De måtte selv finde nogle interessante del-emner.

2. De fik hjælp fra læreren fra starten.

3. Opgaven skulle laves på 1 uge. Men de havde al tiden til rådighed.

4. Læreren havde lavet nogle sider på skolens web-sider.

5. De syntes ikke der var så mange retningslinier, så de havde svært ved at finde fokus og blive enige om emnerne. Men læreren hjalp. Og interessen blev skabt af, hvad de fandt på Internettet.

6. De havde en ide om hvad de ville søge efter: Økonomi, erhverv, vækst, især grafer om erhverv. Det diskuterede de.

7. De havde 2 bøger, men brugte Internettet mest.

8. De startede med den side, som læreren havde lavet. De brugte skolens computer til at søge på deres emner. De havde alle sammen brugt Internet og søgemaskiner før. Så de gik ind i de almene søgemaskiner (Google etc.). De brugte også links fra lærerens side.

9. Alle havde erfaringer i at bruge PC og Internettet. De havde også haft kursus i 1g.

10. Eleverne søgte på søgeord og fandt frem til overskrifter. Det var ikke nemt at finde frem til det rigtige. De fik mange web-sider op, som de ikke kunne overskue. De gik meget hurtigt over til kun at lede efter avisartikler. De koncentrerede sig efterhånden om én kilde, POL-info (Politikens web-side). De vidste fra tidligere opgaver, at den er god.
De ændrede også fokus gennem brugen af web-siderne. De opdagede nogle interessante emner.

11. Eleverne skulle skrive via e-mail til læreren hver dag. De skulle berette om, hvordan det var gået. De kunne også stille spørgsmål. Så fik de meget hurtigt svar (samme dag eller næste). De kunne også ringe.

12. Det var svært for læreren at nå hele vejen rundt, så nogle gange kom hans svar først efter nogen tid. Til sidst kom gruppen i tidsnød og da var det et problem for dem, at lærerens svar tog nogen tid om at komme.

13. Det var godt! Eleverne kunne ikke gøre det samme med bøger, for det ville være for stort et arbejde. De kunne heller ikke få fat i bøger. Der er mange computere på skolen. Dog vil hun vurdere at bøger er bedre end Internettet hvis det er koncentreret stof (en større teoretisk opgave).

14. Eleverne sendte den færdige opgave til læreren via e-mail. De skrev ikke af efter web-siderne. De anvendte tabeller og tal. Læreren checkede også nogle gange de hjemmesider, de havde brugt.

Appendices of case 3:

Appendix 1: List of variables

Below, variables are specified for each numbered question in the survey as follows. First full name, then abbreviation, item expression and scale with denotation of numbers and scale steps.

AGE, AGE *years* (0-100)

SEX, SEX *male/female* (1/0)

1. TIME, TIME How long time have you been with the InternetBank?
0-3 months, 4-6 months and 7-12 months, more than one year, (0/1/0/0)

2. Have you experience with other Internet banks? *yes/no* (1/0)

3. SHOPPING, SHOP, I use internet to buy things (1-7), (*never-very seldom-seldom-sometimes-often-very often-always*)

4. SELF-SERVICE, SELF, I use homepages with self-service options, (1-7), (*never-very seldom-seldom-sometimes-often-very often-always*)

5. COMPETENT, COMP, I consider myself a competent user of the internet, (1-7), *(strongly disagree-disagree-to some extent disagree-uncertain-to some extent agree-agree-strongly agree)*

6. ACCESS TIME, ACCE, How was the content of the InternetBank delivered?, (1-7), (*extremely slow-slow-rather slow-fast enough-rather fast-fast-extremely fast*)

7. DISPLAY RATE, RATE, How was the information displayed on your computer? (1-7), (*extremely slow-slow-rather slow-fast enough-rather fast-fast-extremely fast*)

8. LAYOUT LAYO, The structure of the InternetBank makes my tasks easier, (1-7), (*never-very seldom-seldom-sometimes-often-very often-always)*

9. SEQUENCE SEQU, How do you think that the information given in the InternetBank hangs together? (1-7), (*extremely confusing-confusing-a bit confusing-all right-rather clear-clear-extremely clear*)

10. ARRANGEMENT, ARRD, I can easily make the InternetBank do the things I want, (1-7), *(strongly disagree-disagree-to some extent disagree-uncertain-to some extent agree-agree-strongly agree)*

11. ARRANGEMENT, ARRC, How did the information on the links correspond to the content of the respective pages? (1-7), (*extremely unpredictable-unpredictable-a bit unpredictable-uncertain-somewhat predictable-predictable-extremely predictabl*e)

12. ORGANISATION, ORGA, Do you think that the InternetBank is well organised?, (1-7), (*extremely poor-poor-rather poor-acceptable-rather good-very good-terrific)*

13. CUSTOMISATION, CUST, Do you consider the InternetBank easy to customise? (1-7), (*extremely poor-poor-rather poor-acceptable-rather good-very good-terrific)*

14. INTERACTION, INTE, The InternetBank makes it easy to interact, (1-7), *(strongly disagree-disagree-to some extent disagree-uncertain-to some extent agree-agree-strongly agree)*

15. FAQ, FAQ The InternetBank displays useful information such as FAQ/Help etc, (1-7), (*extremely poor-poor-rather poor-acceptable-rather good-very good-terrific)*

16. FEEDBACK, FEED, How do you rate the InternetBank on feedback features?, (1-7), *(extremely poor-poor-rather poor-acceptable-rather good-very good-terrific)*

17. PRODUCT INFORMATION, PROI, How do you rate the InternetBank with regard to information on bank services?, (1-7), (*extremely poor-poor-rather poor-acceptable-rather good-very good-terrific)*

18. VARIETY OF INFORMATION, VARI, How do you rate the InternetBank with regard to the availability of a variety of services? (1-7), (*extremely poor-poor-rather poor-acceptable-rather good-very good-terrific)*

19. AMOUNT OF INFORMATION, AMOI, How do you rate the InternetBank with regard to the amount of information displayed on webpages?, (1-7), *(extremely inadequate-inadequate-somewhat inadequate-acceptable-somewhat adequate-adequate-extremely adequate)*

20. LIKELIHOOD OF RETURN, RETS, I intend to visit the InternetBank again soon, (1-7), *(strongly disagree-disagree-somewhat disagree-uncertain-somewhat agree-agree-strongly agree)*

21. FREQUENCY OF USE, FREQ, I intend to visit the InternetBank often, (1-7), *(strongly disagree-disagree-somewhat disagree-uncertain-somewhat agree-agree-strongly agree)*

22. SATISFACTION, SATI, What is your overall impression of the InternetBank's webpages?, (1-7), *(extremely frustrating-frustrating-rather frustrating-acceptable-rather satisfying-satisfying-extremely satisfying)*

23. LIKELIHOOD OF RETURN, RETN, If you have a need to use the services of the InternetBank again what is the likelihood that you will return to this homepage?, (1-7), *(very unlikely-unlikely-rather unlikely-uncertain-rather likely-likely-very likely)*

24. Think about the first time you logged on to the InternetBank. Try to remember a particularly satisfying or unsatisfying incident when attempting to carry out your tasks effectively on the homepage. Describe the incident in your own words below.

24. What caused the incident?
25. What happened?
26. How did you react?
27. What did you do?
28. What was the result?
29. Would you like to participate in a telephone interview during 5-10 minutes about the incident you just described? If you answer Yes to participate in a telephone interview we ask you to give us your name, phone number and email address and you will be automatically participating in a lottery of 3 times 1.000:- DKK in cash even if you are not selected for an interview. Write your name here. Write your phone number here. Write your email here.

VARIABLES from questions and links to LATENT CONSTRUCTS

6 AND 7 = DOWNLOAD DELAY
8, 9, 10 AND 12= NAVIGATION
17, 18 AND 19 = INFORMATION CONTENT
21, 22 AND 23 = WEB SITE SUCCESS

Appendix 2a: Instructions for telephone interview

Please follow the steps and ask the questions below. Do not interrupt the response in any way. Only clarifying follow-up questions are permitted according to CIT methodology. The CIT text in the survey is structured in four parts with four driving questions a) - d), see step 2 below. You could look at what the respondent has written when asking the questions.
Hello!
Step 1: Introducing yourself.
My name is X and I am calling on behalf of Lån&SparBank and Roskilde univerity. Do you remember having answered a web survey for new users of Lån&SparBank Internetbank? You indicated an interest to help us even more by allowing us to interview you over the phone (today) about an episode you experienced when first using the Internetbank. and which you briefly wrote down in the survey. Is this OK? Do you have time now? Thanks!
Step 2: Start
In your own words tell me:
a) What happened?
If respondent stops without having given a clear account follow up with a question: Why? What? or if s/he does not remember help out by reading some sentences from the survey.

You could also continue the same procedure with the three remaining driving questions. Be careful to make a distinct break between the questions to facilitate coding by listening.

b) How did you react?
c) What did you do?
d) How do you evaluate the outcome?

Step 3: Wrap up

Thank you very much, that was all. You are now participating in a lottery with a chance to win a sum of money as a token of our appreciation. You have helped us to make the Internet bank better.

Appendix 2b

80 percent. of the respondents reported a problem with either the application or the communication with the website or the bank:

I had gotten a pin code and wanted to use the net bank for the first time. Before I have the time to sit down, I am working on it for half a day, because nobody told me, that the pin code is only valid for one week. It doesn't tell me, that the pin code is too old, and it only tells me, that the pin code I have entered is not valid.

Jeg skulle oprette, og jeg får den her pinkode. Og inden jeg får tid til at sætte mig ned og studere de her ting.så sidder jeg en halv dag, fordi jeg ikke har fået oplyst om at pinkoden kun gælder i en uges tid. Og den fortæller mig heller ikke at pinkoden er for gammel, den fortæller mig kun at den kode jeg har trykket ikke er i overensstemmelse med den anden.

Almost 60 percent of the respondents reported a negative emotional response, to the problem:

I seemed to be entering the wrong code all the time, and finally I get completely paranoid, because I can't remember what I am entering. If the window had not been closed, I would have thrown out the computer. I was annoyed because I thought I was the problem.

Det virkede som om at jeg trykkede forkert hele tiden, og tilsidst bliver jeg fuldstændig paranoid. Fordi ved gud, kan jeg ikke huske hvad jeg selv trykker. Hvis ikke vinduet havde været lukket havde jeg smidt computeren ud. Jeg blev irriteret fordi jeg troede det var mig.

Despite these problems, only 22 percent of the respondents had a negative outcome of the transaction. 40 percent of the problems were corrected with the help from the bank.

14 respondents reported incidents that did not involve a problem with the application or communication, and these incidents created a positive emotional response.

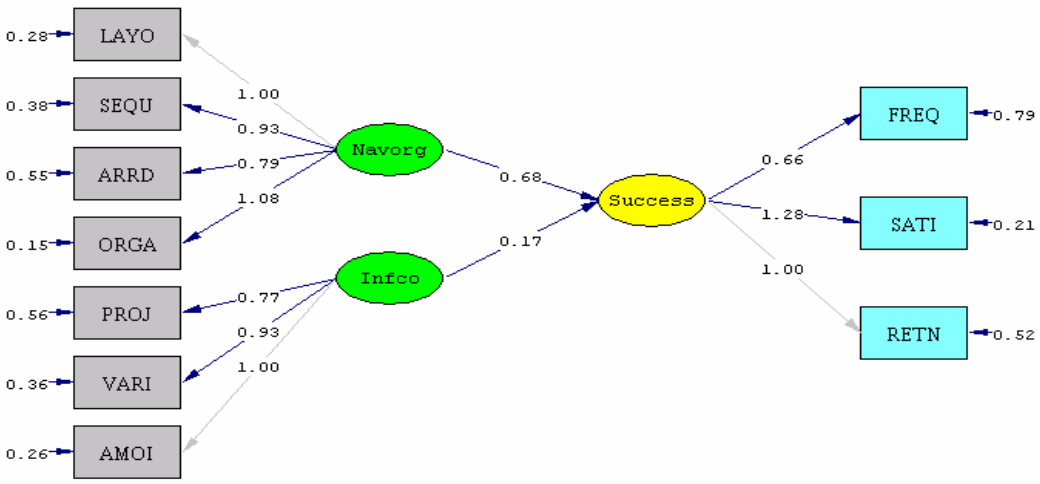
In fact it was very simple, I just followed the instructions I had received … It was nice to know that it was easy to use and that it wasn't very complicated to log on. So in that way I guess you get very happy that you chose this bank.

Det var egentligt meget simpelt, jeg fulgte bare de instruktioner jeg havde fået tilsendt … Det var rart at vide at det var nemt at finde ud af og at der ikke var de store

komplikationer ved at logge sig ind, så på den måde bliver man vel glad for at man har valgt den bank.

Appendix 3: Lisrel model of web survey

RAMSEA=0.129 NFI=0.90 CFI=0.93



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